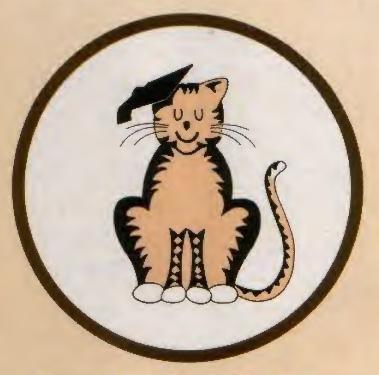


Exciting News for Electron Users
Now Available

CHESHIRE CAT EDUCATIONAL SERIES from AMPALSOFT



CHESHIRE CAT

The First name in Educational Software.

An exciting range of top quality programs covering all needs from pre-school to 'A' level.

Ampal Computer Services Ltd.
31 Woodbridge Road, Darby Green, Blackwater,
Camberley, Surrey.
Tel: (0252) 876677

SILVON LIESTE



News

All that's new in the growing world of the Electron.

Beginners

Part three of Pete Bibby's gentle introduction to very basic Basic.

Notebook

A simple graphics program explained.12

Showtime

Come and meet us at the Electron and 380 Micro User Show. 14

Pelican

Let your Electron teach you to cross the road in safety. 16



Limerick

Did you know your Electron can produce reasonable rhymes? 22

Chess Timer

You think about your moves while your Electron keeps track of the time.

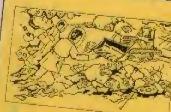


Software Surgery

All you want to know about the latest in software from our frank reviewers:

Adventures

Learn your way around the mysterious, mystifying world of adventure games.



Asteroids

Join the hunt for stellar minerals in this space game with a difference. 34

Maths Workout

Binary numbers made surprisingly simple. 36

Bookshop

Read all about it with the best books for the Electron.

Frieze

Fancy redecorating? Let your Electron help design the wallpaper. 40

Electron **User Offers**

There are cassettes. back numbers and lots, lots more for the keen Electron user.

Roman Numerals

Counting the Roman way, made as easy as I, II, III.

Competition

Win yourself a joystick and printer Interface from Sir Computers.

Casting Agency

38

Yetmore shapes from our readers to brighten your programs.

48



Space Hike

Help the spacemen escape in this classic arcade game. 50

Dog, Duck, Grain

Test your brain power with our intriguing logic game. 52



Bunny Blitz

Avoid Easter bunnles as you collect the Easter eggs.

Micro Messages

The pages you write yourself. A selection from our mailbag. 61



SUBSCRIPTIONS

Subscribe now - and get Electron User delivered to your door each month.





Managing Editor Derek Meakin Features Editor Pete Bibby

Production Editor Peter Glover

Layout Design Heather Sheldrick , Advertisement Manager

John Riding Advertising Sales

John Snowden Marketing Manager Sue Casewell

Published by Database Publications Ltd

Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Telephone: 061-456 8383 (Editorial) 061-456 8500 (Advertising) Subscriptions: 061-480 0171 | Telex: 667664 SHARETG Prestel: 614568383.

Trade distribution in the UK anti-overseas: Contact Steve Flatcher, Circulation Manager of Database Publications at the alliave address: or relaphone him on 061-480-4163. Election User is an independent publication. Acom Computers Ltd., manufacturers of the Electron, are not responsible for any of the articles in this Issue or for any of the opinions expressed.

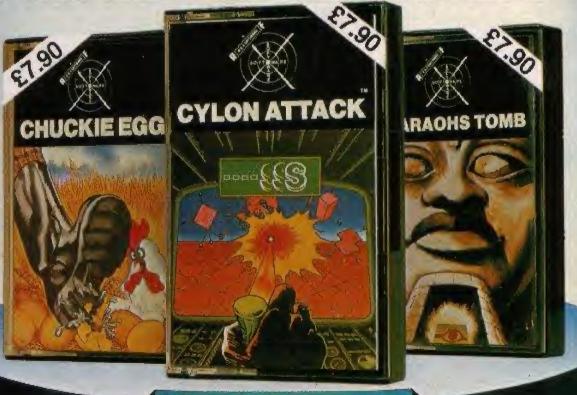
Electron User wetcomes program listings and erricles: for publication: Material should be typed or computer-printed, and preferably double-spaced. Program listings should be eccompanied by cassatte tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an ell-rights basis.

12 UK 10 (806 08 (16)

s 1984 Detabase Publi-critions Ltd. No material may be reproduced in whole or in part without written permission. While overy care is taken, the publishers cannot be held legally responsible for any errors in enticles or listings.







BBC ELECTRON DRAGON SPECTRUM
CHUCKIE
EGG
CYLON
ATTACK
JUNGLE
FEVER
PHARAOHS
TOMB

Available from W.H. Smiths,
John Menzies and all leading
computer stores.

A&F Software

Unit 8, Canalside Industrial Estate, Woodbine Street East, Rochdale, Lancs. OL:16 5LB. Tel: 0706 341111

Production problems still dog Acorn



Tom Hohenburg

On show at the B-I-G show

THE spring Electron and BBC Micro User Show will see the launch of First Byte Computers' new switched joystick interface for the Electron.

The unit, which allows Electron owners to use any Atari style joysticks, consists of a plug-in cartridge that fits on the expansion board at the back of the micro.

This is only one of many new products that will make their debut at the show, being held at the Royal Horticultural Hall, Westminster, from Thursday March 29 to Sunday April 1.

First Byte has taken

Turn to Page 6

HOPES that Acorn had finally cracked its Electron production problems with the signing up of two additional manufacturers have not materialised.

Rather than more becoming available, in the last few weeks supplies have virtually dried up.

And dealers who believed Acorn's pre-Christmas promises of lots more Electrons going on sale in January have had to tell potential customers that they have no idea when they will be able to meet their orders.

Acute

The problem is getting more acute every day, with orders for the seemingly non-existent machines soaring dramatically.

The total backlog of orders now stands at almost a quarter of a million machines.

Last October Acorn

announced that because the Malaysian factory could not produce anything near the number of Electrons needed, a new production line was being set up in Wales.

The firm claimed it would be turning out 4,000 a week from January. They now admit no Welsh-built Electrons will be available until April at the earliest.

They also announced they were setting up a third production line in Hong Kong.

But when Electron User spoke to the manufacturers they said that

they too would be unable to start shipping them to Britain for another few weeks.

While confirming that the three plants would soon be in full production, Acorn's marketing manager Tom Hohenburg sounded a note of caution:

"With the best will in the world we cannot simply produce hundreds of thousands of

machines just like that", he said.

Although Acorn will not give any details, it is understood that one tiny component, a custommade control device, has been responsible for freezing production on the Electron.

This problem is now said to have been resolved and the production lines are able to move into top gear.

High failure rate

THE problem caused by the shortage of Electrons is being compounded by the unusually high failure rate of machines that have been sold so far.

Dealers contacted by Electron User say they have had to return between eight

and 25 per cent of the machines they have sold because of faults.

But full marks to Acorn in a difficult situation. They have made it a priority to replace defective machines immediately.

Just think of a game ...

DID you know that it might one day be possible to control your Electron by the power of thought -

Apparently researchers in behavioural engineering in California are working on games that users can play simply by thinking about what they want to do.

The idea is that the player holds an object that

is sensitive to the galvanic skin response, just like lie detectors. Thoughts can affect the conductivity of the skin and variations in this can be used to control the game.

While it may seem to be a lot of trouble to go to in order to play Space Invaders, the research could be of great benefit to the physically handicapped.

Education market booming

THE Electron is following in the footsteps of its big brother; the BBC Micro, by its wide use in education.

More and more schools are now ordering Electrons as additional machines to their BBC Micros.

Software companies are also looking to the new market to increase their sales.

One of the first on the

scène are Bourne Educational Software of Hampshire.

They have released three programs aiming to help children develop counting, number recognition and compass skills.

Rewritten especially for the Electron, each of the programs comes with an explanatory booklet.

Although Bourne are

an independent company, they are being distributed by Acornsoft following the Acorn subsidiary's new policy of buying in software from other companies.

Not to be left out, Squirrel Software of Manchester have developed a program aimed at helping remedial readers.

Called Visual Recall the software has already

proved its worth in extensive testing in schools, helping children with many different kinds of reading difficulties.

From Golem of Bracknell comes Jigsaw Puzzles, a set of six programs for the Electron

Suitable for children from five to 12 years of age, they were written to help in the development of special concepts and in the formation of problem solving strategies.

Silversoft of London are converting their successful series of BBC Micro educational programs to run on the Electron.

They are also releasing what promises to be the first disassembler to be produced for the Electron.

Speedy loading on way

GOOD news for Electron owners frustrated with the slowness of saving and loading from cassette. Your problems may soon be over.

Two firms already well known in the BBC Micro world are planning ways of speeding things up.

The first is Pace of Bradford. Already one of the leading suppliers of disc filting systems for the BBC Micro, they are actively engaged in producing a similar system for the Electron.

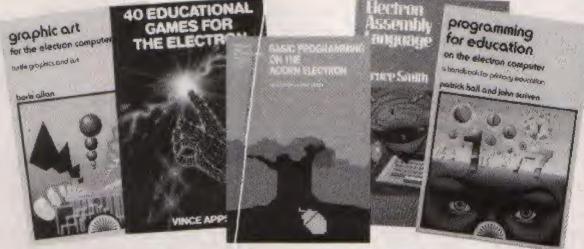
This means programs will be able to be loaded and saved in a matter of seconds rather than minutes, giving Electron users more time to use their machines.

From Ikon Computers of Dyfed comes the promise of another faster storage method, the Hobbit.

This is a tape based system whose speed approaches that of discs.

Well known to BBC Micro users, the Hobbit has recently had its price reduced and its speed increased.

This will make it a serious rival to disc based systems when it is released, hopefully later in the year.



More books for Electron

SPRING this year will see a flood of books covering all aspects of the Acorn Electron.

Beginners are well served by Neil and Pat Cryer's "Basic Programming on the Acorn Electron".

Well known for their book on the BBC Micro, the Cryers have repeated the same step by step, non-technical approach aimed at absolute novices.

However, the new books aren't all aimed at the elemeritary end of the market.

From Shiva comes Bruce Smith's Electron Assembly Language, a simple, well illustrated guide to using machine code to tap the hidden depths of the Electron.

With its treatment of the use of the Electron's built in assembler – one of its best features – and its explanation of the operating system, the book will open a whole new world to the Basic programmer.

Another specialist field, education, is well served by two of the new literary crop.

From Granada, who appear to be taking the lead in publishing for the Electron, comes "40 Educational games for the Electron" by Vince Apps.

Not to be outdone, Sunshine have brought out "Programming for Education on the Electron Computer".

Written by two teachers, Patrick Hall and John Scriven, the book is aimed at the primary education sector.

Sunshine have also produced "Graphic Art for the Electron Computer" by Boris Allan, the first book aimed specifically at exploring the Electron's graphics capabilities.

Database link planned

From Page 5

steps to ensure that Electron games now under development will be compatible with the new interface.

They have contacted all leading software houses giving details of the interface's software requirements and asking for their cooperation.

"We have been delighted by the help we've had from everyone", said Ray Threadgold of First Byte.

"Already A & F Software's Cylon Attack allows the use of our interface, and lots more are planned".

Other new products for the Electron are appearing thick and fast.

Not content with producing a joystick interface, Protek Computing of West Lothian has developed what promises to be the first modern for the Electron.

It allows users to talk to each other and mainframe computer databases such as Prestel over the telephone system.

This will vastly expand the scope of the micro.

Production is ready to go ahead as soon as British Telecom approves the production model.

Electron Eddie-torial

I WAS grabbed as soon as I walked in the door. "Pete, have a look at this, it's the first program I've ever written".

Tom put the cassette into the player and proudly LOADed his masterpiece.

'Watch this', he said as he typed in RUN and pressed Return.

It was really nice. Not the most original program I'd ever seen, but certainly an accomplished one.

He had made full use of the Electron's graphics abilities and the program was neat and crisp, well structured and well thought out. A competent piece of work.

"I like it", I said, wondering when I could use it in Electron User.

At that moment his dad came into the room.

"Look at that", Tom said, "it's my first program".

"Oh yes, very nice. What does it do?"

Tom's face dropped. What did it do?

I could have wept. I mean, did anyone walk up to Leonardo da Vinci when he'd finished the Mona Lisa and say: "Very nice, what does it do?"

What could I say? The guy had created a really nice program, showing that he had a thorough grasp of basic graphics and could use his knowledge practically.

Anyone who knew a little about micros would have been impressed, yet here he was, floored.

It was so frustrating. If he'd bought a radio instead of a micro and spoken to someone in Australia, everyone would have been thrilled.

If he'd have spent his money on a track suit and running shoes and trained up to run 26.2 miles in a marathon no one would bother asking why.

As it was he bought an Electron and used his time to understand how it worked and to create

something that, however simple, was uniquely his.

He imagined it, thought about it and achieved it in practice. He'd used his micro creatively to express a part of himself.

And he'd been asked why.

I thought about it for quite a while, trying out different replies to his dad's question. Eventually I got the right answer.

So when you show someone your program and they ask you what it's for, don't bother trying to explain.

Just tell them: "If you have to ask the question, you'd never understand the reply".

Pete Bibby

Not so much what it does as how it does it . . .

USERS & DEALERS

Signpoint Itd.

Computer Technology

JOYPORT - Introduce



ELECTRON JOYSTICK

Interface Type I

- Suitable for Atari, Commodore or Coin Controls type Joysticks
- Easy connection via the rear expansion connector.
- Supplied with program details for use with most arcade games.

£16.95 inc. vat

PAINTPORT

Electron Centronics Printer Interface Self contained interface to drive Centronic printer

- Recognising V.D.U., *FX & control codes.
- Simple Instruction.

£44.95 inc. vat

Please write and send cheques to: Signpoint Ltd.,

166a Glyn Road, London E5.

ALL ITEMS EX STOCK



ELECTRON INTERFACE ADAPTOR

- Four duplications of rear connector
- Protects internal components
- External power supply connection.

£29.95 inc. vat

Tel: 01-986 8137 Telex: 923229 Comles G Att: Hislot

Part Three of PETE BIBBY'S introduction to programming

LAST month we saw how to write our own programs. Admittedly they were fairly trivial. But programs they were, exhibiting the basic features of any program.

This month we'll be looking at some ways of improving them and the output they produce on screen.

Again the examples won't be much to write home about, but it's the principles involved we're after.

Try the programs for yourself and see if you can understand how they work and if you can improve them.

Remember, it's a "hands on" course and you'll get a lot more out of it if you work through it on your Electron.

First though, let's have a look at what we've done so far.

We saw last month that a Basic program consists of a numbered sequence of instructions to the computer.

We entered these instructions, one after the other, giving each a line number.

These line numbers went

Unravel that and pick up some hints

up in steps of 10, allowing us to slip in other instructions if necessary.

We saw that we could replace a line with an altered version simply by typing in a new version, giving it the line number of the line we want it to replace.

If we wanted to get rid of a line completely we just typed in that line number and pressed Return.

We found that the Electron

didn't obey these instructions straight away but waited until we typed in RUN, followed by the inevitable press of the Return key.

Finally we learned that we could use LIST to get the micro to display a list of instructions, NEW to clear it out of memory and CLS to clear the screen.

Now let's get cracking on the Electron. Type in Program I:

10 REM PROGRAM I

20 PRINT "HELLO"

30 PRINT"OUT"

40 PRINT "THERE"

Enter RUN and press Return. This will tell the micro to obey the instructions that it will find in its memory.

It starts at the one with the lowest line number. After that has been done it goes on to the next one and so on until it runs out of instructions.

As you'll see from the screen, the program displays the message:

> HELLO BUT THERE

This is using the same techniques we came across last month. But the more observant of you might have noticed there is a new keyword.

This is the REM of line 10 and it is one of the easiest Basic statements to use and understand

REM is short for remerk, and the REM statement allows you to put remarks into your programs.

The Electron will ignore

anything after a REM statement. When it finds one, it goes on to the next line number.

This allows you to put in your own remarks after the REM without upsetting the micro.

This can be very useful when you start to write longer programs. The remarks after the REM statements help to make the program more understandable.

Many a program has been saved from obscurity by a liberal use of REM statements.

In Program I the REM is used to make a note of the program title. The Electron doesn't read the PROGRAM I after the REM but goes straight to line 20.

I could have put in all sorts of remarks after the REM and the micro would still ignore them, no matter how personal

Try leaving out the REM of line 10 and see what happens. The Electron is looking for a keyword, a Basic word of power. It is quite confused by the PROGRAM I which it finds after the line number.

Let's leave the REM statement for a while and go on to Program II, which prints out the same message in a different way.

But first, don't forget to type in NEW and press Return to get rid of the old program from memory.

10 REM PROGRAM II

20 PRINT"HELLO", "OUT", "THERE"

Some of you may have looked at Program I and wondered why I used three



string

PRINT commands in separate lines to print out the three bits of the message, Wouldn't one PRINT do?

Well, it will as Program II shows, though the message does look a bit spaced out.

The reason why it is spread across the screen is that we've put commas between the strings. "The what?" I hear you ask. The strings.

Put at its simplest, a string is just a piece of text placed in quotation marks. The Electron treats everything it finds inside quotation marks as one lump or string.

We've already used three strings in this article. They are "HELLO", "OUT" and "THERE". The Electron found one of these after each print statement of Program L.

The quotation marks told in that what followed was a string, and it printed out the whole string as one lump. Notice that it doesn't print the quotation marks. They are just there to mark the beginning and the end of the strings.

Strings are very important in programming. But for the moment we'll leave it at that and go on to see why Program II printed the strings "HELLO", "OUT" and "THERE" in the way that it did.

As we might expect, the strings were displayed on the same line but without their inverted commas. But why were there the gaps between the words on the screen?

The answer is because we put commas between the strings – or we did if we typed the program in properly.

If we do this after a print statement it tells the micro to display each string on a separate part of the screen.

in the normal course of events the Electron divides the screen into four groups of 10 characters each. If instructed by commas between them, it will print the strings in separate fields.

Try:

PRINT "ONE", "TWO", "THREE", "FOUR"

and you'll see the separate

What happens if you enter:
PRINT "ONE", "TWO",
"THREE", "FOUR",
"FIVE", "SIX"

and press Return? Try it and see.

There's a lot more to these print fields, as they are called. But the point to grasp is that when commas separate the strings after a PRINT command then the strings are displayed in separate fields.

Let's see what happens when we run Program [II;

10 REM PROGRAM III

20 PRINT "HELLO"; "OUT"; "THERE"

As you can see it's very much like Program II, only the commas have been changed to semicolons.

This effectively "glues" the strings together, overwriting the print fields we came across earlier.

The trouble is that the output looks a mess. There are no spaces between the words.

All the Electron does is print out the first string - "HELLO".

Then it finds the semicolon, which tells it to print whatever comes next straight away without any gaps.

The Electron doesn't know that you need spaces to make the words clear. If you want spaces, you have to add them yourself.

Run Program IV and see the result:

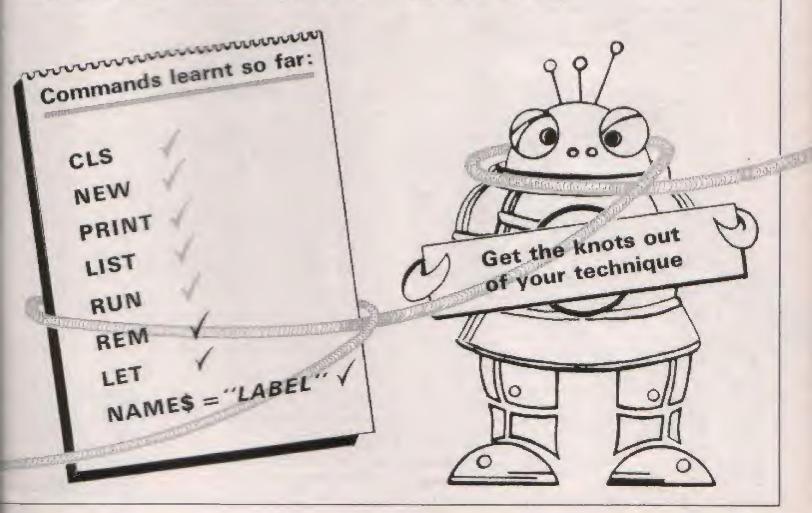
10 REM PROGRAM IV

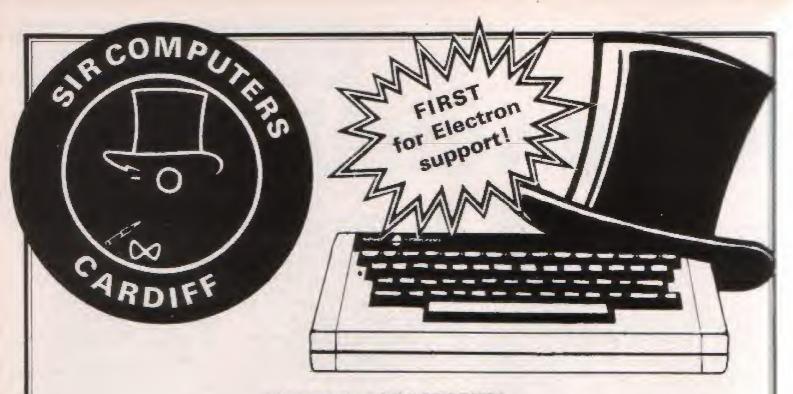
20 PRINT"HELLO "; "OUT "; "THERE"

Here we've included the two necessary spaces in the strings. The Electron doesn't mind.

It will print out whatever it finds between the inverted commas — letters, numbers, spaces or any combination of them.

So now we've got our





SIR RESEARCH PRESENTS: OUR RANGE OF PERIPHERALS FOR THE NEW ACORN ELECTRON

SIR ELECTRON 12-ROM BOARD

- ★ Provides for up to 192K of ROM space (16K of this will support either ROM or RAM).
- * Fully buffered design.
- Easy to install, just plugs in, no soldering necessary – professional plastic casing.
- Allows further expansion via rear edge-connector.
- ★ Permits use of most BBC ROM-based software (such as VIEW, PASCAL, FORTH, etc)
- * Price £40.00 + VAT

SIR ELECTRON PRINTER & JOYSTICKS INTERFACE

- * CENTRONICS printer interface.
- Analogue-to-Digital Converter (ADC) allows use of any BBC-compatible joysticks.
- No soldering, plug-in design professional plastic casing.
- * Full firmware support.
- Built-in, versatile edge-connector provides for further expansion.
- * Price: £45.00 + VAT

AVAILABLE SOON: INPUT/OUTPUT PORT, RS423 INTERFACE, and more!

We also stock a complete range of Printers, Monitors and Software for the BBC Micro at hard to beat prices - most of this is fully Electron-compatible!

BBC MICROCOMPUTER

BBC Model B£399.00 BBC Model BD£469.00

MONITORS

Sanyo B/G£85.00 Microvitec RGB£229.00

PRINTERS

 Dot Matrix:
 £399.00

 Epson FX-80
 £399.00

 Epson RX-80
 £275.00

 RX-80 F/T
 £289.00

 Shinwa CP-80
 £263.35

 Daisywheel:
 Juki 6100
 £399.00

DISC DRIVES

 Single 100K
 £199.00

 Dual 100K
 £349.00

 Dual 400K
 £669.00

 TORCH Z80 DISC PACK: (Now with FREE £1000 worth of software!)
 £839.50

Please write or telephone for further details.

All our prices are inclusive of VAT unless stated otherwise.

ACCESS/BARCLAYCARD TELEPHONE ORDERS WELCOME.

Postage and Packaging:

Please add £1 P&P (small items: ROM Boards, etc.); £10 P&P (large items: Printers, Monitors, etc.).

SIR COMPUTERS LTD.

91 Whitchurch Road, Cardiff, CF4 3JP. Telephone: Cardiff (0222) 621813





From Page 9

program to print out the message on one line, neatly spaced. It's taken us a long time to get here, hasn't it?

Still, the principles involved will stand you in good stead in your programming career.

Mind you, we could have saved ourselves a lot of trouble if we'd run Program V:

- 10 REM PROGRAM V
- 20 PRINT"HELLO GUT THERE"

This just prints out one long string. Simple isn't it?

You may be wondering why we didn't do this in the first place. Well, with this message you could.

But the Electron sets a limit to the length of any one string. I leave you to work it out.

When you use long massages, you'll find that you need to know all the above techniques and how punctuation affects the PRINT command.

There's one more pace of punctuation that we haven't touched yet - the apparaghe.

Have a go at Program VI. Se careful when you type it in that you don't get confused between the puctuation marks:

10 REM PROGRAM WE

20 PRINT "HELLO " "OLT " THERE"

We're back to the beginning again! Well, not quite, because we have done it in half the number of lines.

As you can see, the apostrophe between the strings tells the Electron to print the next string it finds at the beginning of a new line.

This can be quite useful for spacing out long messages.

Try using two or three spostrophes between the strings, and you'll see what I mean.

So we can now write out simple programs to display messages.

We're not just stack with HELLO OUT THERE. We can put anything we want between the inverted commas and the Electron will display it.

The trouble is that the messages can get quite long. When you have had a little more experience you'll find that you're using PRINT to display quite large strings on the screen.

Take the case of the instructions for computer games. The part of the program that displays these uses exactly the same methods as we have done, only it has a lot more to say.

Also it might say the same thing at several points in the game, for example: "PRESS RETURN FOR ANOTHER GO".

It would be daft if we had to type in all the words every time we came to it.

Couldn't we give it a label and just tell the micro to print the label? It would save a lot of typing.

The answer is yes, and the use of labels is shown in Program VII:

- 10 REN PROGRAM VII
- 20 LET A\$="HELLG "
- 30 LET 8\$="OUT "
- 40 LET C#="THERE"
- 50 PRINT AS
- 60 PRINT BS
- 70 PRINT C\$

As you can see, the result is the same as before, only we've used a different method. We have given each of the strings a label.

Now when we want the Electron to do something with the string we can use the label to refer to it.

Since the label is shorter in length than the string, this saves a lot of typing.

The labels I have used are AS, BS, CS. The fact that they are in alphabetical order means nothing. I just picked them like that.

Nor does the name have to be so short – you can try other names.

The important thing to notice is that each one ends in a dollar sign, \$, You'll find this above the 4 on the keyboard.

The rule is that if we want to refer to a string by a label – properly called a variable name – then that name must end in \$ or else the Electron will get confused.

Let's take a closer look at Program VI. You'll notice that there is a new keyword in lines 20, 30 and 40.

This is the keyword LET. It tells the Electron that in future the string on the right of the equals sign will be referred to by the label on the other side of the equals sign.

It is important to remember that the label, the name you're giving to the string, comes after the LET.

The actual string you're labelling comes after the equals sign,

So lines 20, 30 and 40 assign labels to our three faithful old strings.

Lines 50, 60 and 70 then use PRINT to display the strings. But they refer to the strings by the labels we gave them in lines 20 to 40.

In this case using labels didn't save us much typing, but let's go back to the game instructions where it will,

It makes life much easier to have a line like;

10 LET MESSAGE*="PRESS RETURN FOR ANOTHER 60"

Now if you want the message you can just use the label in a line like:

40 PRINT NESSAGE\$
rather than type in something
like:

40 PRINT "PRESS RETURN FOR ANOTHER SO" which would be fairly time consuming if we wanted the same message over and over again.

You'll see from Program VIII that we can use the labels exactly as if they were the strings themselves.

Here we only use one PRINT command to display the message, with the punctuation between the labels acting just as if the string themselves were there.

- 10 REM PROGRAM VIII
- 20 LET AS="HELLO "
- 30 LET B\$="OUT "
- 40 LET C#="THERE"
- 50 PRINT AS: BS: C\$

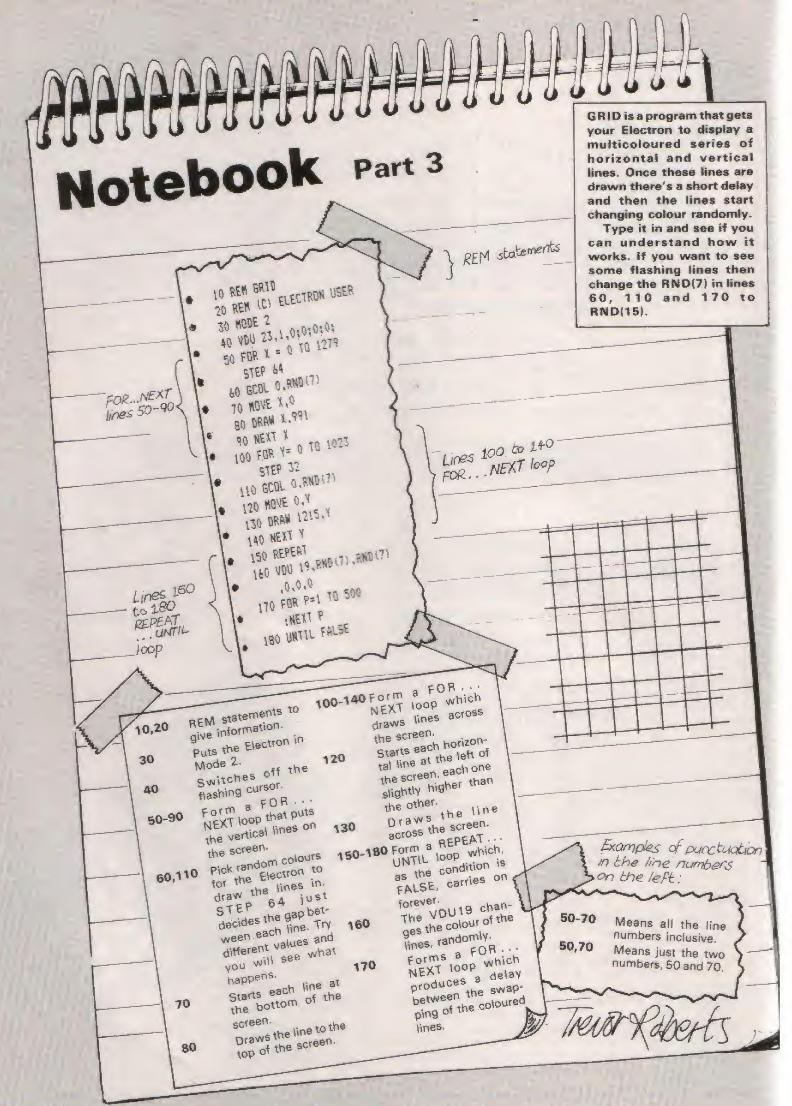
Try it out with commas and apostrophes between the labels and see for yourself what happens.

There's a lot more to strings than we have covered in this article, but for the moment that's enough.

Try writing a few of your own programs to print messages on the screen.

Use labels as much as possible to make your life easier, and soon strings will become second nature.





Make light work of listings!

All program listings in Electron User have been put on tape - to save you the chore of keying them in yourself. Four tapes are now available for the February, March and April issues, plus a bumper tape of all the programs from the first few introductory issues.

On the April tape:

SPACEHIKE A hopping arcade classic, FRIEZE Electron wallpaper. PELICAN Cross roads safely. CHESSTIMER Clock your moves. ASTEROID Space is a minefield. LIMERICK Automatic rhymes. ROMAN Numbers in the ancient way. BUNNYBLITZ The Easter program. DOGDUCK The classic logic game. NOTEBOOK Coloured grids. BINARY A base program,

On the March tape:

CHICKEN Let dangerous drivers test your nerve. COFFEE A tantalising word game from Down Under. PARKY'S PERIL Parky's lost in an invisible maze. REACTION TIMER How fast are you? BRAINTEASER A puzzling program. COUNTER Mental arithemetic can be fun! PAPER, SCISSORS, STONE Out-guess your Electron. CHARACTER GENERATOR Create shapes with this utility. FUNNY POLYGONS Fast graphics going round in circles. RABBITS Easter bunnies a lover! DRAW Multi-coloured lines. MEAN Just an average program.

On the February tape:

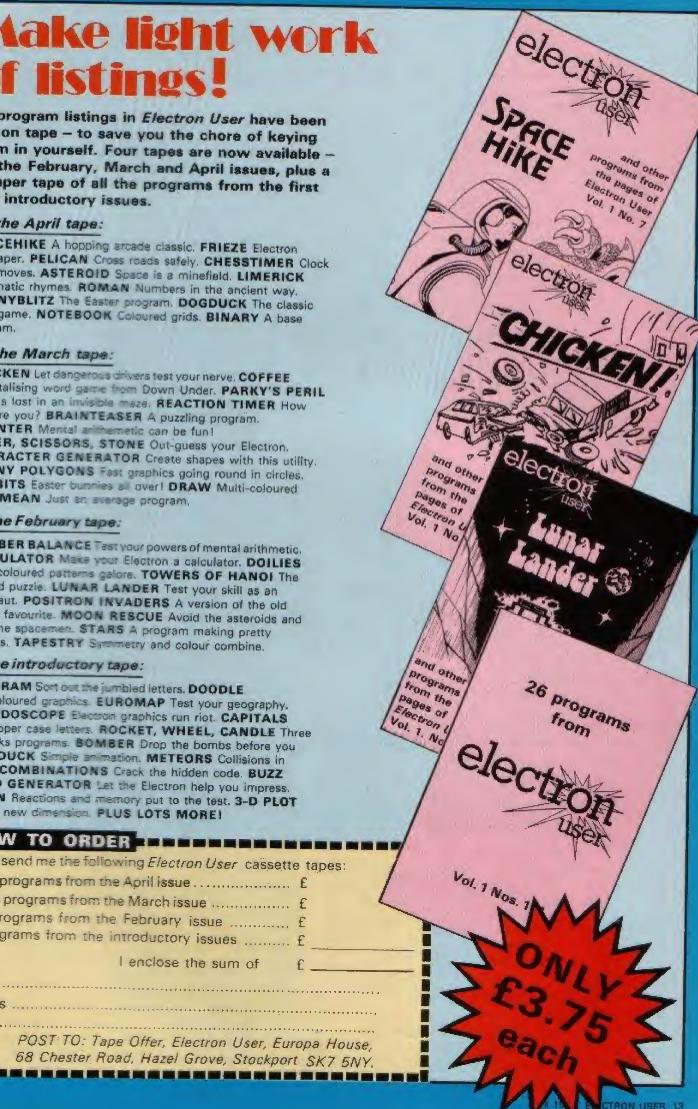
NUMBER BALANCE Test your powers of mental arithmetic. CALCULATOR Make your Electron a calculator. DOILIES Multi-coloured patterns galore. TOWERS OF HANOI The age old puzzle. LUNAR LANDER Test your skill as an astronaut. POSITRON INVADERS A version of the old arcade favourite. MOON RESCUE Avoid the asteroids and save the spacemen. STARS A program making pretty pictures. TAPESTRY Symmetry and colour combine.

On the introductory tape:

ANAGRAM Sort out the jumpled letters. DOODLE Multicoloured graphics. EUROMAP Test your geography. KALEIDOSCOPE Electron graphics run riot. CAPITALS New upper case letters. ROCKET, WHEEL, CANDLE Three fireworks programs. SOMBER Drop the bombs before you crash, DUCK Simple an mation, METEORS Collisions in space. COMBINATIONS Crack the hidden code. BUZZ WORD GENERATOR Let the Electron help you impress. SIMON Reactions and memory put to the test. 3-D PLOT Enter a new dimension, PLUS LOTS MORE!

HOW TO ORDER

Please send me the following Electron User cassette tapes: Eleven programs from the April issue £ Twelve programs from the March issue £ Nine programs from the February issue £ 26 programs from the introductory issues £ I enclose the sum of Address POST TO: Tape Offer, Electron User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY,



Ajoint presentation by
The Micro User & Electron

The Micro User & Electron

Don't miss the great new for the Electron

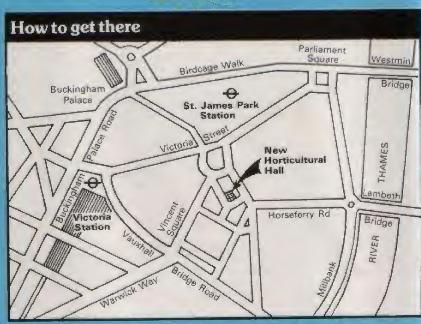
Here's your big chance to catch up on all that's been happening recently in the fast-developing world of the Electron and BBC Micro.

And there's so much new to excite and intrigue you . . .

NEW programs from the fertile minds of Britain's leading software writers – games galore, plus a growing number of new packages for teachers and for industrial and business users.

NEW hardware add-ons that expand even more the power and versatility of your micro.

Electronics wizards regard both the Electron and the BBC Micro as a challenge to their ingenuity. Their latest creations on display at the Electron and BBC Micro User Show will astound and delight you!



This woucher is worth £1 per person off the normal admission price of £3 (adults) and £2 (children) (Valid for a maximum of 4 people) Electron & BBC Micro User Show 10am · 6pm, Thursday, 29 March 10am · 6pm, Friday, 30 March 10am · 6pm, Saturday, 31 March 10am · 4pm, Sunday, 1 April New Horticultural Hall Greycoat Street, London SW1

School and College Groups

Entry only £1 per student if bookings are made in advance. Send your cheque (made payable to Database Publications) and SAE to:

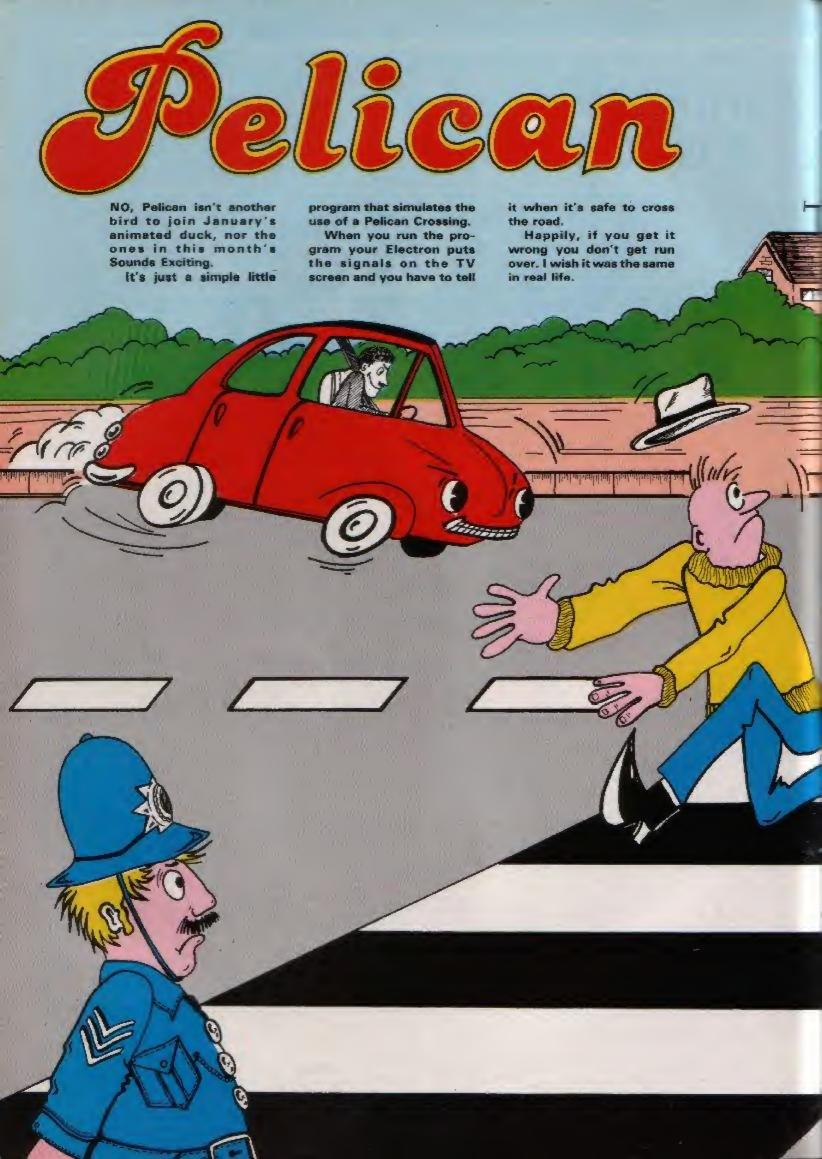
Electron & BBC Micro User Show 68 Chester Road, Hazel Grove Stockport SK7 5NY Tel: 061-456 8383 Spring show of all that's and BBC Micro

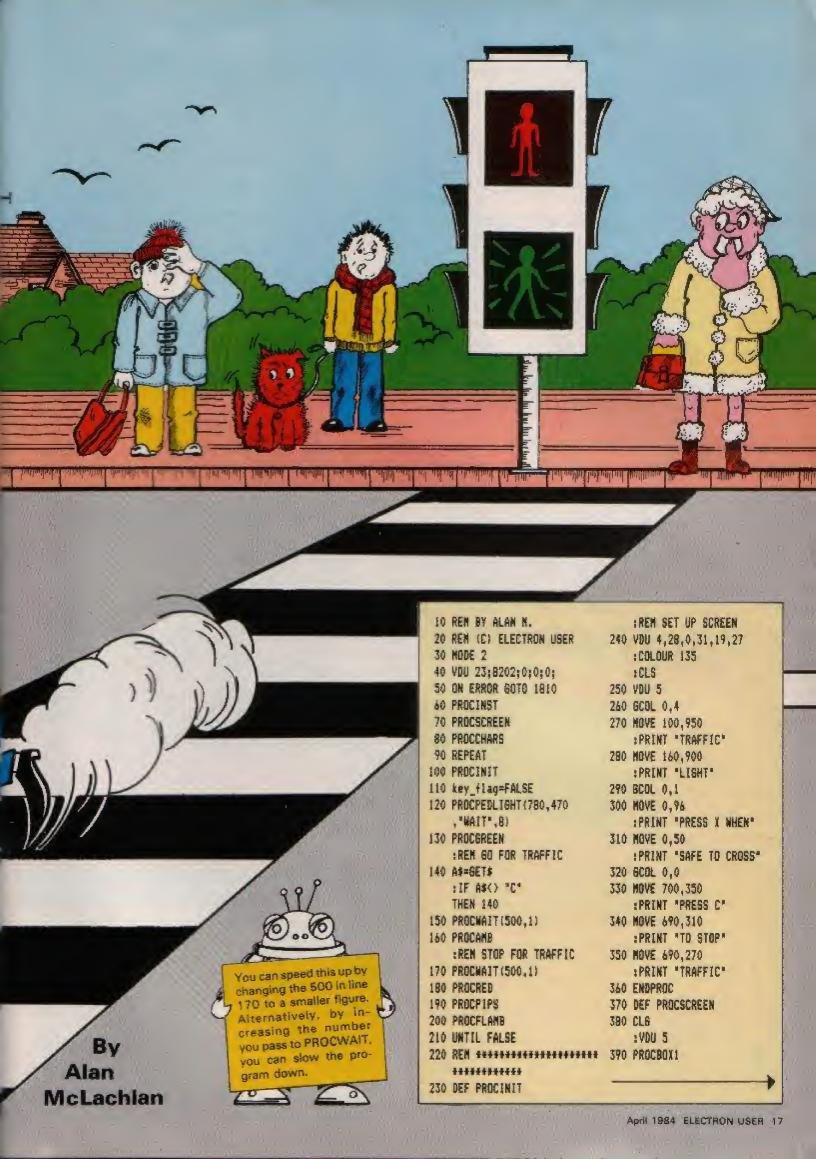


New Horticultural Hall

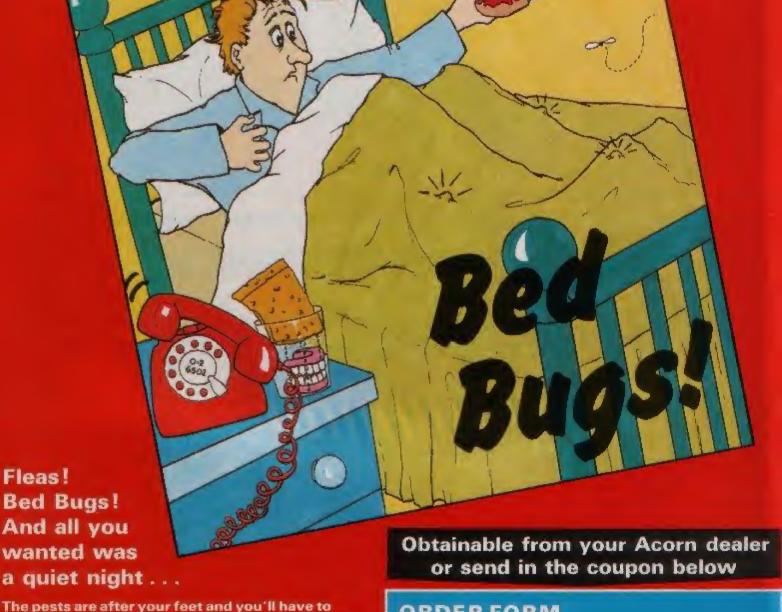
(Westminster Exhibition Centre)

Thursday to Sunday, March 29 to April 1





You'll be ITCHING to get your hands on the funniest program of 1984!



sandwich or crunch them with your false teeth. If you're desperate you can always phone for

move fast to stop them. Swot them with a jam

help. But whatever you do, do it quickly. You need cunning tactics and nimble fingers!

Bed Bugs guarantees hours of hilarity for the whole family.



PTIMA SOFTWARE

ORDER FORM

Please	send	me	BED	BUGS:
--------	------	----	-----	-------

- BBC 'B' cassette £6.95
- ☐ Electron cassette £6.95
- □ BBC 40-track disc £8.95
- □ BBC 80-track disc £8.95

Add 50pp&p (post free 2 or more) Address

- I enclose cheque made payable to Optima Software Ltd.
- I wish to pay by
 - ☐ Access ☐ Visa

Signed

Expiry date

Optima Software Ltd., 36 St. Petersgate, Stockport SK1 1HL

Pelican listing

From Page 17

400 PROCBOX2

410 PROCEDX3

420 PROCPEDMAN(13)

430 PROCLIGHTON (310,730

.15

440 PROCLIGHTON (310,510

,31

450 PROCLIGHTON (310, 290

,21

460 ENBPROC

470 REM *****************

480 DEF PROCLIGHTON (XX.YX)

CXI

490 VDU 19,1,0;0;

500 VDU 19,2,0;0;

510 VOU 19,3,0;0;

520 VBU 19,13,1;0;

530 RI=60

540 VDU 29, XX; YX;

550 GCGL 0.CZ

560 MOVE 0.0

570 FOR 1=0 TO P1 *3

STEP .25

580 MOVE 0.0

590 PLOT 85,RX+COS 1,RX+

SIN I

600 NEXT

610 VDU 29,0;0;

620 ENDPROC

630 REM *************** **********

640 DEF PROCRED

650 IF key flag ENDPROC

660 VDU 19,1,1;0;

670 VOU 19,2,0;0;

660 VDU 19.3.0:0:

690 VOU 19,13,2;0;

700 PROCEDIX

710 ENGPROC

720 REM *************** **********

730 DEF PROCAMB

740 IF key flag ENDPROC

750 VDU 19,3,3;0;

760 VOU 19,2,0;0;

770 VDU 19,1,0;0;

780 ENDPROC

790 REM ************** *********

800 DEF PROCELANS

810 IF key_flag ENDPROC

820 VDU 19,1,0;0;

830 FOR 11=0 TO 10

840 VDU 19,3,3;0;

850 VDU 19,13,2;0;

860 PROCWAIT(90,1)

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

870 VDU 19.13.0:0:

880 VDU 19,3,0;0;

890 PROCWAIT (90.1)

900 NEXT

910 ENDPROC

920 REM ***************

930 DEF PROCEREEN

940 VOU 19:2,2:0:

950 VDU 19,3,0:0:

960 VDU 19,1,0:0;

970 YDU 19,13,1;0;

980 ENDPROC

990 REM ***************

1000 DEF PROCPEDLIGHT (AX

,B%,L\$,C%)

1010 GCOL 0.CZ

1020 MOVE AZ, BZ

1030 PRINT LE

1040 ENDPROC

1050 REM ***************

1060 BEF PROCPEDMAN(CX)

1070 PROCCHARS

1090 GCOL 0.C%

1090 MOVE 870,750

1100 VDU 224,10,8,8,228,225

,227,10,8,8,226

1110 ENDPROC

1120 REM ***************************** 1310 MOVE 750,570

1130 DEF PROCCHARS

1140 VBU 23,224,0,0,0.60

,60,60,60,60

1150 VBU 23,225,126,255,255

,255,126,126,126,126

1160 VDU 23,225,126,102,102

,102,102,102,231,0

1170 VDU 23,227,0,0,128,192 ,224,64,0,0

1190 VDU 23,228,0,0,1,3,7 ,2,0,0

1190 VDU 23,255,255,255,255

,255,255,255,255,255

1200 ENDPROC

1210 REM ***************

1220 DEF PROCEDTS

1230 VDU 7

1240 SCOL 0.0

1250 MOVE 200,180

: MOVE 200,840

:PLOT 85,420,840

1260 MOVE 200,180

MOVE 420,180

:PLOT 85,420,840

1270 ENDPROC

1280 REM **************

1290 DEF PROCBOX2

1300 GCOL 0,0

: MOVE 750,840

:PLUT 85.1050.840

1320 MOVE 750,570

:MOVE 1050,570

:PLOT 85.1050.840

1330 ENDPROC

1340 REM *************

1350 DEF PROCEDX3

1360 GCDL 0,0

1370 HOVE 750.410

: KOVE 750,510

:PLOT 85,1050,510

TI FK B-0 F- 1- N 4







斯斯 事業 第三 点类 15% THE WILL SEE THE SEE

WOLLER. W 新 新 新 新 新 新 市 市 東 市 THE STATE MAN THE RESERVE IN THE SECTION 新工作和 55·55 。

Pelican listing

1510 MOVE 130,900

From Page 19	1520 PRINT "PELICAN CROSSING" 1530 MOVE 130,860	:*FX15,1	££####£#++#
AWAR MADIE SEA ALL	1530 MOVE 130,860	1660 REPERT	1740 DEF PROCNAIT(MX,6%)
1380 MBVE /50,410	1540 PRINT ">************		
:MDVE 1050,410	1550 VBU 4	1680 UNTIL TIME >=30 DR A\$()	1750 DL=0
:PLOT 85,1050,510	1540 COLQUR I	8.4	:REPEAT DL=DL+1
1390 ENDPROC	1570 PRINT TAB(1,10)*PRESS	1690 IF A\$<>"1" AND A\$<>""	1770 IF INKEY (-67) AND GI
1400 REN ***********************************	1560 COLOUR 1 1570 PRINT TAB(1,10)*PRESS THE 'C' KEY WHEN YOU ARE READY TO STOP TRAFF IC" 1580 COLOUR 4	THEN VDU 4	AND NOT key_flag
********	WHEN YOU	: CLS	VDU 4
1410 DEF PROCPIPS	ARE READY	: COLOUR O	:CLS
1420 P=0	TO STOP TRAFF	:PRINT "THE "X" KEY	:PRINT "YOU BLEW IT"
:REPEAT P=P+1	tc"	I SAID"	₹VDU 5
1430 SOUND 1,-15,200,1	1580 COLOUR 4 1590 PRINT TAB(1,20) "PRESS	: PROCWAIT (900.0)	:kev flao≃TRUE
1440 PROCCHECKI	1590 PRINT TAB(1.20) "PRESS	ELSE IF As="X"	:FOR BL2=0 TO 200
1450 UNTIL P=25 OR key flag=	THE 'X' KEY	THEN YOU 4	: NEXT
TRUE	THE .X. KEA	:CLS	1780 UNTIL DL=WX OR key fi
1460 ENDPROC	IS SAFE	PRINT '*YOUR TIMING	1790 ENDPROC
1470 REN ****************	IS SAFE 10 CROSS THE ROAD."	IS RIGHT""IT IS SAFE	1800 REM ***********
**********	THE ROAD."	TO CROSS. ":	********
1480 DEF PROCINST	1600 PRINT TAB(2,29)*ANY KEY	:PROCWAIT(900.0)	1810 MODE 7
1490 COLDUR 135	TO START":	1700 IF AF=""	1820 REPORT
	IATO AS=GFTS	THEN VOU 4	:PRINT " In line ";
:6001.0.0	1A20 ENDPROC	THEN VDU 4	ERL
2CLS	1610 A\$=GET\$ 1620 ENDPROC 1630 REM ***********************************	FISE Yev flan=TRUE	
:CLS :CL6	**********	1710 VDU 5	This listing is included in this month's cassett
1500 VDU 5	1640 DEF PROCCHECKX	1720 ENOPROC	tape offer. See orde
rain ind A		White a Constitution of the Constitution of th	The array and diffe

BBC/ELECTRON ADVENTURES

1650 TIME =0

NEW WOODLAND TERROR E7.48 (CASS) £10.50 (DISC)

The sequel to FIRIENWOOD, many years ago an intrepid adventurer ambarked on a quest for the Golden Bird of Paradise. Although successful, our hero released a sinister force which now lurks within the enchanted wood. Your mission is to return the terror to its original resting place and restore peace to an unhappy land!!! This is a complète game; knowledge of Firienwood is not required.

FIRIENWOOD £7.48 (CASS) £18.50 (DISC)

An evil wizerd has captured the magic golden bird of paradise and imprisoned it in a weird castle in the middle of the enchanted Finenwood. Your quest is to find the bird and set it free, in return the bird will give you health and prosperity. BEWARE! many perils lie before you and every move is fraught with danger!!

BLUE DRAGON £7.48 (CASS) £10.50 (DISC)

Somewhere in a strange and dangerous land lies a fabulous treasure guarded by a fierce dragon. Can you survive the perils that await and recover the treasure or will you meet a nexty end!! What is making terrible slurping noises deep underground and what use is the strange black cloud? Play the game and find out.

SURVIVOR £7.48 (CASS) £10.50 (DISC)

The year is 1910 you are sailing on a steamer bound for Borneo when there is an explosion and the ship sinks. Shipwrecked on a tropical Island can you survive and escape back to or will you and up in someones cooking pot!! There is more than one ending to this game, not all of them bad!

All the games are in machine code for tast responses and are text only. Please state which machine when ordering. Prices include VAT and postage within U.K. Cheques payable to MP SOFTWARE or write/phone with your ACCESS/VISA card No. Send S.A.E. for full range of programs and price list or ask your local dealer. Trade enquiries

We pay well for good original programs contact us today for more details.



SOFTWARE & SERVICES

165, SPITAL ROAD, BROMBOROUGH, MERSEYSIDE L62 2AE, 061-334 3472

Regardez!

1730 REM ****************





key_flag

duded in assette e order

- * Pupils
- Teachers

form on Page 43.

- Travellers
- Students Graduates
- Linguists
- In fact anyone having an interest in French will benefit from this unique language learning aid Also available for

BBC model B **SPECTRUM 48K**

* Ready made lessons provide an enormous vocabulary of words, phrases and verbs arranged in subject groups.

* Lessons can be run in three ways; learning, self-test or

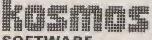
speed and accuracy test where you key in the answers. * Lesson displays include all French accents, different colours for masculine and feminine words:

Full tape editing facilities allow an infinite number of new or updated lessons to be created and stored for later use.

Choice of Level A or B cassettes with totally different vocabularies. £9.95 each (P&P inc.)

Both cassettes include extensive word lists; verbs and phrases are introduced in Level B. Available from dealers or mail order State BBC, Spectrum or Electron

Also available "The German Master" "The Spanish Totor".



SOFTWARE

1 Pilgrims Close, Harlington, Dunstable, Beds, LU5 6LX Tel: 05255 3942

THE GAME TO MAKE YOUR SKIN CRAWL

BUGBLASTER

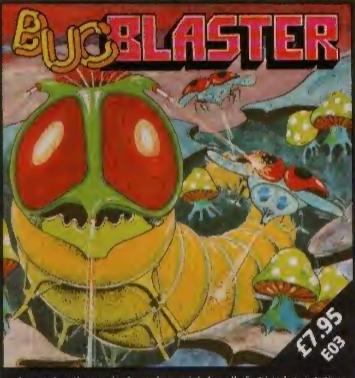
THE ACTION PACKED HIT REWRITTEN FOR ELECTRON

Alligata presents a superb range of software products that are designed specially for you. Games that deverly containe full machine code and high resolution, full solour graphics to create hours of fun and excitement. And utilities that have been developed to open new doors and help get the best from your Electron micro. If it's to be outstanding quality and amazing value for money then Alligate has to be your choice.

Send a stamped addressed envelope for our full colour catalogue which gives details of the complete range.



Land your moon buggy and rescue a precious cargo, destroying all opposition on the way: finding your way back to the mother ship start again against greater older.



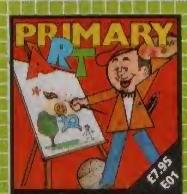
A superb action packed arcade special. A really fast implementation of the splendid 'centipede.' Features include spiders, mushrooms, centipedes and the mushroom poisoning scorpion affectionately known as 'Brian.' The better you get the faster the action. Nerve tingling excitement should keep you up all night!

Experience all the speed and excitement of the arcade spectacular

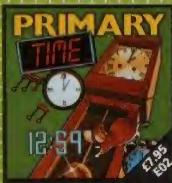
WRITE OR PHONE

also available from all good software stockists.

F05 Scribe II £9.95
Produce professional letters and documents, speedily and easily, with this superb word processing program — handling up to 2 A4 pages as one file. Simple to use, yet very powerful, Scribe II handles up to 600 lines of tex with 80 characters per line screen display. Compatible with most printers.



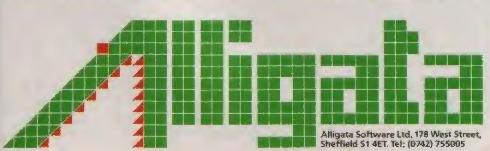
Croate a picture to be proud of – place pre-programmid shapes in any position, any size or any colour. Features free-hand drawing and animation effects:



The fun-filled way to learn to tell the time, The combination of sound and simple display complement each other to produce a very easy to use teaching package.



Keeping your money in your packet enjoy at the excitement of beating the one arm bandit.



Despatch is normally made on receipt of order and should reach you within 7 days.

INDICATE PROGR	RAMS REQUIRED
FORD FORD FOIL	A SHALL SHAL

renclose cheque/PO* for £ ____ Charge my Access/Visa E*__

| Card No. _____ Signature _____ Name ____

'payable to Superior Systems Ltd., 178 West Street, Sheffield \$1 4ET: 'allow 75p for post and packaging.'

BOOKSHELF

IF you're looking for just another book of games listings then "Take Off with the Electron and BBC Micro" will probably disappoint you.

However if you're after 11 interesting programs with lots of ideas on how to improve them then this is for you.

For listings are not just programs in their own right but

there was a fat writer called Andrew

And went out one day

PRESS ANY KEY TO CONTINUE

To rosp in the hay

Who seldow said "Yes" and then "Ean do"

That hopeless fat writer called Andrew

Take off with the Electron and BBC Micro

Granada Publishing

can be expanded. And the book tells you how to do this.

It starts with a concise but thorough description of elementary Basic and then goes on to the listings.

Each program has a chapter to itself and all chapters have the same structure.

You first read a description of what the listing does. Then comes the listing itself.

These are easy to read and the authors claim that "it is very unlikely that there are any mistakes in the listings". Brave words and, as far as I can tell,

The listings are useful and

fun. But the real value of the book, to my mind anyway, is in what follows them.

Each chapter has a wellannotated flow chart illustrating how it works. Then comes a line-by-line description of the program, very much like the ones you'll find in Electron

When you've read how the program works there's a discussion of the keywords involved, nicely cross-referenced to the other listings.

Then comes a section describing one of the techniques used in the program, such as user defined characters and file handling.

These really add to the book's value.

Finally you reach the 'Take off from here" section. This gives suggestions about modifying and improving the programs given.

I like the book. For the person who's taken his first faltering steps in Basic and would like to start more ambitious programming it's

The authors strike just the right level, not too difficult, not too simple, while keeping it all interesting.

Also the programs are nicely chosen. They range from the limerick writer (reproduced here) to a stunt car game via a music maker and a weather forecasting program.

All are short and easy to experiment with, and all of them are well explained.

Thoroughly recommended.

Nigel Peters

There was a poor toddler called Sarah Who seldom ate steak so much rerer And went out one night To put out the light That hopeless poor toddler called Sarah PRESS ANY KEY TO CONTINUE

Limerick illustration from Take off with the Electron and BBC Micro

Limerick listing

I REM FROM TAKE OFF WITH

2 REM THE ELECTRON AND

3 REN BBC MICRO

4 REM BY DWEN AND

S REM AUDREY BISHOP

6 REM GRANADA PUBLISHING

7 REN PRICE ES. 95

8 REM USED WITH THANKS

10 REM **LIMERICK**

20 MODE 4

30 READ A

:DIM A\$(A)

40 FOR J=1 TO A

: READ A\$(J)

: NEXT J

50 READ B

:DIN B\$(B)

60 FOR J=1 TO 8

: READ B\$(J)

: NEXT: J

70 READ C

: READ, &

:DIM C\$(C), D\$(D,C)

80 FOR K=1 TO C

: READ C# (K)

90 FOR J=1 TO 0

: READ 0 (J.K)

ENEXT

. NEXT 100 READ E

TREAD F

:DIN EF(E), F\$(F,E)

110 FOR K=1 TO E

: READ ES(K).

120 FOR J=1 TO F.

: READ F\$(3,K)

: NEXT

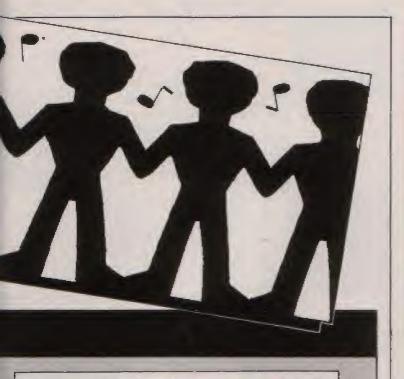
: NEXT

130 READ 6

:DIM 6\$(6) 140 FOR J=1 TO 6

: READ G\$ (J)





This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

BO READ H

:DIN H#(H)

00 FOR J=1 TO H

: READ H\$(3)

: NEXT J 70 READ I

:DIM [#(1)

80 FOR J=1 TO I

\$ READ (\$(J)

THEFT JOYCH

O REPEAT ...

oo els

10 PRINT TAB(16,5) "LIMERSEK"

20 RA=RND(A)

:RB=RND(B)

:RC=RND(C)

:RE=RND(E)

O PRINT TAB(0,10) There

was a "A\$(RA)" "B\$(R8)

* called *Sk(RC)

(O PRINT "Who "H\$ (RND(H))

" "D\$!RND(D1,RC)

50 PRINT "And "I\$ (RN3 (1))

" "E\$ (RE)

60 PRINT "TO "F\$ (RND(F)

(RE)

TO PRINT "That "S# (RNB(S))

" "A\$(RA)" "B\$(RB)" calle

d *C\$(RC)

BO PRINT TAB(8,30) PRESS

ANY KEY TO CONTINUE"

90 keys=GETs

OO UNTIL FALSE

10 DATA 3, poor, fat, rich

320 DATA 4, singer, writer , toddler, pop star

330 DATA 3,2, Andrew, liked eating cheese fondue

340 DATA said "Yes"and them "Can do"

350 DATA Sarah, ate steak so much racer

360 DATA thought no one would dame 'er

370 DATA Winny, liked wearing a pienty

380 DATA locked horribly skinny

370 DATA 2,3, one day, rosp in the hay

400 DATA join in the fray

410 DATA go out to play

420 DATA one night, have

a good fight. 430 DATA put out the light

440 DATA just be polite

450 DATA 2, silly, hopeless

450 DATA 2, always, seldon

470 DATA 2, went out, started

LIMERICK is one of 11 listings in 'Take Off With The Electron and BBC Micro" by Audrey and Owen Bishop, It is published by Granada Publishing, price £5.95. Our thanks to Granada for permission to reproduce the game.

ELECTRON USERS!

Don't miss April's

THE MICRO USER

It's a feast of fascinating ideas and programs - our liveliest issue ever!

IN ITS FEATURE PACKED PAGES YOU'LL FIND

- * MICROGOLF: a compulsive simulation of a day on the golf course.
- * SOUND LIBRARY: create a whole collection of exciting sounds with this useful utility.
- BEGINNERS: how to use MOD, DIV and RND effectively in your programs.
- * MAGIC SQUARES: a number game that teaches simple addition as you play.

And, of course, most of the many programs featured in The Micro User can be easily modified for the Electron.

All in all, if you're an Electron User. it makes sense to also buy The Micro User.

> The April issue is now on sale at your newsagents.

NOW AVAILABLE ON THE ELECTRON D.A.C.C.'s SPRITE - GEN

Runs in 4 colours Mode 5 PRICE £9.95

The BBC version of this highly successful package has won a nomination in the 1984 British Micro Computer Awards,

Write your own 'Arcade Action' games with D.A.C.C.

Sprite-Gen

This amazing and revolutionary new piece of software, written for the BBC Model B by Dennie lobotson, represents the biggest step forward for BASIC programmers since the release of the BBC Micro itself, it ollows you to create multi-coloured, fast moving SPRITES, controlled simply from your own BASIC program. Now you can write the kind of "Arcade Action" games you always dreamed of writing before you discovered that BASIC can't achieve the speeds necessary. Until now, only experienced machine-code programmers could produce "Ghost Gebbling Monsters" and "Light Speed" spacecraft. With SPRITE GRAPHICS all the creatures and disjects you can immans are at your command, muving amountly at any speed and in any precioen you choose increatibility. SPRITES can be created using ALI SIXTEEN logical colours—eight steady and eight flashing. And as if that were not enough you animate your SPRITES with individual movements such as "a man who walks", "I bird that flaps its wings", "Invaders that pulses menacingly", the possibilities are endiless! When you own the SPRITE GENERATOR package you have acquain to every sort of high-speed animation technique you need. Buying expensive machine-code games may become a thing of the past. Look at the following impressive list of features you can access from your own RASIC programs—

- Up to 32 SPRITES on acreen at any time.
- Limitiess SPRITE design using the SPRITE Generator program included in the package, allows ALL SIXTEEN logical colours "in each SPRITE" if desired, Full operating system capability of logical/actual
- There can be up to EIGHT different SPRITE DESIGNS active at one time, each of which can have up to THREE "CLONES", (copies of the primary SPRITE but each with individual movement control).
- Each SPRITE actually has TWO images which given slight differences will achieve the enimetion effects when the two are alternated. Or, if you choose, give the two images totally different designs and you have created two SPRITES out of one, usells alternately. This technique can also be applied to the CLONES which means that all 32 SPRITES can be enimeted, multi-coloured, moving objects!!!
- Once you have completed the design of your SPRITES using the simple grid-based generator utility, they and the high speed machine-code routines that control their measurement are scoreted into RAM and the BASIC system is ready to succept your own program lines through which you can direct the SPRITES to appear, move, disappear or just remain stationary, with the simplest commands you could makine.
- SPRITES can be linked together in pairs or groups to produce large scale animation. Of course, if you wish they can be as small as a scale anima single pixel
- Your own creations can move in front of each other with no loss of detail.

- SPRITE-GEN is supplied as a po
 *** Sprite-Generator program

 *** Two fast-action demonstration programs

 *** Sprite-Gen control routines

 *** Sprite-Gen control routines

 *** Illiustrated user manual with examples and farings

 All for only E17.95 (pp and VA7 included).

 In U.S. \$49.85

BEWARE OF IMITATIONS

DRAGON, ATARI 400/800, BBC MODEL/B TRS 80 C/C 32K 747 FLIGHT SIMULATOR

Superbly realistic instrumentation and pilot's view in liferise simulation which includes emergencies such as engine fires and systems failures. This program uses high resolution graphics to the full to produce the most realistic flight-deck display yet seen on a home computer. There are 2 * real dists and 25 other indicators (see diagram). Your controls operate throttle, alteronis, stevetors, flaps, stats, spotlers, landing pear, reverse thrust, brekes, etc. You see the runway in true perspective. Uses juysticks and includes options to start with take-diff or random landing applicach. "A real simulation, not just another game," (Your Cemp. Apr. 83).

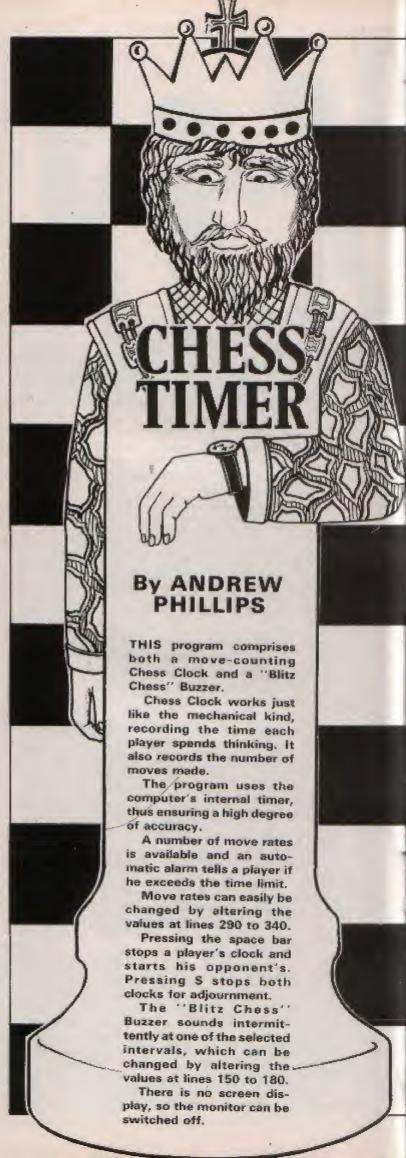


CASSETTE £8.96 (pp and VA7 included). in U.S. \$27.95 (pp included)

(U.K. orders desparched within 48 hours)

Dealer and foreign distributor enquiries now being taken. Software writers – sell your programs in the U.S. through OACC.

To DACC Ltd., Dept. EU, 23 Waverley Road, Hindley, Wigan, Lanca, WN2 3BN.
Please rush me:
qty. SPRITE-GEN at £17.95 each (BBC Model/B only)
qry, SPAITE-GEN at E9.95 each (Electron only)
qsy. 747 FLIGHT SIMULATOR at £9.95 each (state mathine)
I enclose a cheque/P.O. to the value of
NAME
ADDRESS
POST CODE



50 MODE 5 : VDU 23; 8202; 0; 0; 0; 60 VDU 19,2,4;0;17,130 ,12 70 #FX11 80 *FX4.1 90 COLOUR 1 :PRINT TAB(4.3) "CHESS TIMER TAB(4) STRING\$(11 # COLDUR 3 100 PRINT TAB(2.8) "SELECT FUNCTION: "''' 1 - Chess Clock"'' * 2 - 'Blitz Chess''' Buzzer" 110 ON INSTR("12", SET#) GOTO 220 ,120 **ELSE 110** 120 CLS : COLOUR 1 :PRINT TAB(0,2)"'BLITZ CHESS' BUZZER" STRING\$(20," ") : COLOUR 3 130 PRINT TAB(2.9) *SELECT INTERVAL: " - 5 seconds"''* 2 - 10 seconds**** 3 - 15 seconds" " " 4 - 20 seconás" 140 DN INSTR("1234", SET\$) GOTO 150 , 160 ,170 ,180 ELSE 140 150 IntervalX=5 : GDTO 190 160 Interval%=10 :6070 190 170 Interval %=15 :6070 190 180 Interval X=20 190 CLS :PRINT TAB(3.8) *Switch off TV"''then press SPACE BAR"'" to start buzzer" 200 PRINT TAB(1,25)* (Buzzer Interval =""SPE (4); I ntervall; " seconds) " 210 REPEAT UNTIL GET# = :PRINT TAB(0,8) SPC (100) :PROCbuzz(Interval%) 220 CLS

10 REN "CHESS TIMER"

40 ON ERROR SOTO 470

30 REM (C) ELECTRON USER

20 REM A. Phillips

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

: 84=2 :Ratel=0 :A11%=0 230 DIM TX(1),CX(1),SX(1) ,MZ(1);HZ(1),MoveZ(1) 240 ENVELOPE 1,0,0,0,0 ,0,0,0,125,-4,0,-1 ,126,100 250 COLOUR 1 :PRINT TAB(4,2) CHESS CLUCK"TAB(4)STRING\$(1) : COLOUR 3 260 PRINT TAB(2,7) *SELECT MOVE RATE: " 1 0 - No limit **** 1 -20 mayes/hour"''" 2 - 25 moves/hour " ... " J - 30 moves/hour" 270 PRINT TAB(1,18)*4 -All moves in"' 15 minutes"'' 5 - All moves in " " " 30 minutes"10 " & - All moves in"" * 50 minutes* 280 ON INSTRI°0123456° .GET\$) GOTO 360 ,290 ,300 ,310 ,320 ,330 ,340 ELSE 280 290 Rate%=20 :6010 360 300 Rate%=25 :SOTO 350 310 Rate%=30 :6010 380 320 All%=15 :60TO 350 330 Al1%=30 :6010 350 340 A11%=60 350 CLS : COLOUR .1 :PRINT TAB(5,28)"Time limit:"" "ALL MOVES/";

All%; minutes"

: IF Rate%()0 COLOUR 1

:PRINT TAB(1,28) "Move

:6010 370

360 CLS

. rate: ";Rate%;"/hour" 370 PROCet aw (600) :PROCdraw(1232) 380 COLOUR 3 :PRINT TAB(3,4) "WHITE" TAP(2,8)"0: 0: 0" TAB(4.16)0 390 COLOUR O :PRINT TAB(13,4) "BLACK" TAB(12,B)"0: 0: 0" TAB(14,1610 400 COLOUR I :PRINT TAB(8,14) "Moves" 410 PROCHait 420 SOUND 1,-10,93,5 430 REPEAT 440 PROCtime(0,1,8,3) 450 PROCtime(1,11,8,0) 460 UNTIL FALSE 470 GN ERROR OFF 480 IF ERR =17 RUN 490 MODE 7 : REPORT :PRINT " at line ";ERL 500 81=10 510 *FX4 520 *FX12 530 END 550 DEF PROCdraw(xX) 560 SCOL 0.1 570 MOVE x1,800 : DRAW xX, 700 580 DRAW x%-548,700 : DRAW x 1-548,800 590 DRAW x%,600 600 ENEPROC 620 DEF PROCwait 630 COLOUR 3 :PRINT TAB(3,21)*Press SPACE BAR" ' to start clock" 640 REPEAT UNTIL SET# = 450 PRINT TAB(0,21) SPC (60) 660 ENDPROC 680 DEF PROCtime (NY, XY YX,PX) 690 TIME =TX(NX) 700 REPEAT

710 ##=1MKEY\$ (0)

720 ZX=TIME

730 CX(NX)=2% MOD 100 740 \$%(N%)=(2% DIV 100) MOD 60 750 MX(NX)=(IX BIV 6000) MOD 60 760 HX(NX)=(2% DIV 360000) MOD 12 770 COLOUR PX :PRINT TAB(XX,YX)HX(NX) ": "MX (NX) ": "SX (NX) 780 IF ALLX=0 6070 800 790 IF Allx=MV(NX) OR ALLY-HY (NY) *60 PROCLOSE ELSE 810 800 IF MoveX(NX) (RateX+HX(N %) PROClose 310 IF X\$="S" OR X\$="s" PROCHait :TIME =FWtime(CX(WX) , SX (NX), MX (NX), HX (NX)) 820 UNTIL X\$=" * 830 SOUND 1,-10,77+NX*16 ,5 B40 TX(NX)=FNtime(CX(NX) ,SY(NY),MY(NY),HY(NY)) 850 Move%(N%) = Move%(N%) +1 :PRINT TABILETS, YX+B) Me ver(NX) 860 ENDPROC 880 DEF FNtime(cl,sl,al , 17. 890 =c%+(s%+100)+(s%+4000)+ (h%*360000) 910 DEF PROClose 920 FOR 1%=170 2 :SOUND 1,1,97,6 :SOUND 1,1,77,10 : NEXT IX 930 IF NX=0 P\$="WHITE" ELSE P\$="BLACK" 940 PRINT TAB(5,21)P\$+ " LOSES" '" ON TIME DEFAULT* 950 REPEAT UNTIL FALSE 960 ENDPROC 980 DEF PROChuzz(Interval%) 990 REPEAT 1000 TX=TIME 1010 REPERT UNTIL TIME =TX+1 nterval7#100 1020 SOUND 1,-12,33,40 1030 UNTIL FALSE 1040 ENDPROC

This listing is included in this month's cassette tape offer. See order form on Page 43.

BRAINTEASER

About which book did ELECTRON USER say:

"each program an interesting and amusing challenge"

> "a nice change an enjoyable book, far from the run of the mill"

> > "if you like puzzles and you've got an Electron, then you'll like this book"

ANSWER BRAINTEASERS



This unique computer book, designed for the 15 plus age group will test your logic, general knowledge mathematical skills

Available from all good book shops or direct at £5.95 plus 55p p&p.

PHOENIX PUBLISHING ASSOCIATES 14 VERNON ROAD BUSHEY HERTFORDSHIRE WD2 2JL TEL WATFORD 32109

NAMEADDRESS		
POSTCODE		
Cheques/Postal Orders to. – Phoenix Publishing Associative Vernon Road, Bushey, Herts.	gati	25



GARLAND COMPUTING

35 DEAN HILL - PLYMOUTH - PL9 SAF.

TELEPHONE: 0752 41287

LEARNING MATHS with the electron

A collection of programs for use by children of 9 upwards. Written by a teacher and approved and used in schools throughout the country. Each package contains 3 to 4 programs using animations and simple games to help learn the principles of maths in an interesting and entertaining way. All members of the family will enjoy using these programs.

A series of nine titles is available:-

JM1 Angles

JM2 Directed numbers

JM3 Fractions

JM4 Co-ordinates and lines

JM5 Symmetry

JM6 Motion geometry

JM7 Sets

JM8 Elementary statistics

JM9 Ratio

Each package is superb value at just £7.00 (inc. VAT and P&P)

Available by mail order, or from selected computer stores and educational suppliers. Please send for full details.

the educational specialists



ELECTRON UTILITIES

58

15 useful programs and procedures that can save hours of programming effort. Includes statistical diagrams, super-fast sorting (much faster than bubble), colour graphics and lots more.

INFORMATION HANDLING

£11.50

A two-cassette package of programs and data-bases to introduce you to the world of information technology. Use large data-bases, create and use cassette files, produce your own electronic dictionary. Features 19th century population survey with full documentation on how to computerise similar information for your own area. This package has been written for new computer users or anyone who wants an introduction to information handling.

FUN MATHS 1 and 2

Age 6-13

Two packages that have been designed by teachers and written by professionals to greatly improve the mental number work of their pupils. These full-graphics programs are great fun to use and have proved very successful in speeding-up logical thought and mental arithmetic.

1. SQUARE PUZZLES (4 programs) £6 2. INVADER MATHS (2 programs) £4 (Buy both for £8.50)

PRINT-AND-PLOT PAD

If you are going to write useful programs for the ELECTRON then careful planning of screen layouts is essential. Our 60-sheet pad allows rapid designing of displays, in both text and graphics, in all modes. Each sheet also includes user-defined-graphics grids.

GRAPH PADS £2 each or 3 for £5

Cheques etc. to:

SCORBY SOFTWARE, Main St., Flixton, Scarborough, YO11 3UB

Software Surgery

THE COLUMN THAT TAKES A LOOK INSIDE THE LATEST RELEASES

Adventure into an arcade winner

Cyberton Mission Program Power

"ASSORBING", "Electrifying", "Frustrating", "Addictive" are just a few of the adjectives I would use to describe Program Power's latest space game.

Load the program into your Electron and you are immediately conveyed into a danger-strewn world of spinners, clones, cyberdroids and spooks. You may not be sure exactly what they are but you can be certain they're nessy.

On the first level you are instructed to find a key which can be used to open a safe.

Doing this conveys you to higher levels, where more dangers await you.

However things are not as straightforward as just wendering round the screen until you find the key. Life in space — or at least in space games — is never that simple.

You'll need every one of your five lives as you battle your way through a series of maze-like rooms.

You score points each time you zap a spinner, and gain an extra life when, and if, you reach a pot of gold.

If you survive the first few batches of spinners you'll find that clones begin to block your way.

And after the clones come the cyberdroids - vacuum cleaner lookalikes with nasty dispositions,

Two points to note. First, watch out for the spooks. These little treasures will come and get you at every



possible opportunity. You've got to be alert and quick on the draw.

Second, you must have the key in order to open the safe to proceed to the higher levels.

The program is a cross between arcade-style action and an elementary adventure, combining the two perfectly,

It's exciting with plenty of variety, excellent graphics and interesting sound effects. You'll be a-mazed. And if you are anything like me, you won't be able to put your Electron down. A winner.

Paul West

Monster mission

Castle Frankenstein Epic Software

CASTLE Frankenstein is a text adventure originally written for the BBC Micro B and has now been converted to run on the Electron.

The plot centres around Frankenstein's monster.

Originally he was thought

to have perished in a fire 20 years ago. But now, because of unsolved murders in the area, there's a growing suspicion that he's alive and well and intent on vengeance,

The villagers have elected you to be their champion, and your task is to find and destroy the monster.

To help you the cassette comes with an insert which gives general information about the game.

Something I found rather strange about this insert was a claim that the tape was disc compatible. I suspect this was intended for the BBC rather than the Electron.

However it probably won't be long until the Electron has discs, so curiosity made me try putting the tape onto a friend's BBC Micro with discs.

I found you could not use it on disc without using a routine to move it down in memory.

Even then the save-game option would only work with cassette. I would be interested to know if the same is true of the BBC version.

On loading the program presents instructions and background information. Then begins one of the best all-round adventures I have ever seen for the Electron.

I will not reveal anything about the actual playing of the game. That's a pleasure I'll let you experience for yourself.

Whoever wrote this program has an extremely devious mind, and makes you work very hard for each piece of progress.

Yet, at the same time, he allows you to roam quite a distance before presenting you with puzzles to solve. This, I feel, is the proper way to write an adventure.

The beginner has lots of locations to explore to get the feel of the game, but the more experienced adventurer can go through them rapidly to reach the puzzles.

There were a few minor things I wasn't happy with, For instance, there's no on-screen indication of exits. But I've probably just got into lazy habits with other adventures.

The program itself responds very quickly to keyboard input, and the save-game facility — which is an absolute necessity — is very fast.

Overall, an extremely good adventure and excellent value for money.

Merlin

The frogs march on

Croaker Program Power

CROAKER is another version of that well known game in which suicidal frogs cross busy highways and then hop their way to safety across a river in order to reach a hole in the bank.

One day I am going to ask someone how come frogs drown if they fall into a river?

The program loads reliably and screen instructions appear while the main code is being loaded in.

The configuration of the



National Micro Centres

One-stop shopping for all that's best for the Electron

Telephone orders: 061-429 8080 (24 hours)

It's all here... the very latest Electron software

LANGUAGES

Forth (AS	Landaren er staten er	€14.00
Lisp (AS)		£14.00

EDUCATION

Draw (MP)	28.65
Invisible Man (CS)	£6.04
Puneman 1 and 2 (C5)	
Tree of Knowledge (AS)	£8.00

RECREATION

Bandits at 3 O'Clock (MP)	€6.04
Chess (MP)	£6.91
Chuckie Egg (AF)	
Crime & Detection Quiz (AS)	£11.00
Croaker (MP)	£6.91
Cybertron Mission (MP)	€6.91
Cylon Attack (AF)	£6.87
Draughts & Reversi (AS)	£8.00
Escape from Moonbase Alpha (MP)	
Felix & The Fruit Monster (MP)	
Felixin the Factory (MP)	
History Quiz [AS)	
IDo (AS)	£11.00
Intergalactic Trader (MP)	£7.78
Kamakazi (AF)	
Killer Gorilla (MP)	
Meteors (AS)	
Monster (AS)	£8.00
Moonraider (MP)	
Music Quiz (AS)	
Pharaoh's Tomb (AF)	£6.87
Positron (MP)	
Royal Quiz (AS)	£11.00
Science Fiction Quiz (AS)	£11.00
Starship Command (AS)	£8.00
Swoop (MP)	£6.91
The Dating Game (AS)	£11.00
What Makes You Tick (TP)	

AF - A&F Software Mi AS - Acomsoft TF CS - Chalksoft

MP - Micro Power TP - Third Program

Personal shoppers can obtain the products advertised on this page from the following retail stores:

Stockport Micro Centre 4/6 Brown St., Stockport, Greater Manchester. Tel: 061-480 0539

Wilmslow Micro Centre, 62 Grove Street, Wilmslow, Cheshire. Tel: 0625 530891

BUSINESS & HOME

Money Management (AS)£10.00

GRAPHICS

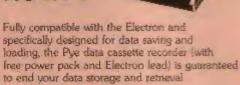
Creative Graphics	(AS)	£8.00
Graphs and Charts	(AS)	£8.00

DATA STORAGE

A data cassette recorder that perfectly matches the Electron

£34.74

problems.



UK CUSTOMERS; Add 15% VAT, carriage free. Overseas Sales VAT free, please enquire for carriage rates.

Be among the first to own the electrifying Electron!

The baby brother of the BBC Micro has been hailed by the computer press as a big breakthrough in power and price. This exceptional machine is already being forecast to be the top-selling micro of 1984. It comes complete with an introductory cassette of 15 programs, a very comprehensive user guide and an easy to understand DIY book on programming.



£173.00

Stocks are limited, so it's very much a case of first come first served. We promise that no cheques will be cashed until the machine is despatched.

lectron	Dunce	Course		£2.56
	The Reference	LUVEL	 	Application of the last

Δ DD	m		
	F K		I-CIVI
ORD		\mathbf{I}	INIVI

Post to: NATIONAL MICRO CENTRES, 36-38 St. Petersgate, Stockport SK11HL.

ltem	Please supply the following		Qty	£	P
	Attractive credit terms Phone for details		VAT 15%		.,,,,,,,,
	ndicate method of payment: Cheque payable to National Micro Centres Access/Barclaycard No.	Address		*********	

From Page 27

keys is a little unusual - A and Z for up and down, while M and N control lateral move-

However, they soon feel natural enough, although I would imagine that a joystick would improve matters.

The game's format is fairly standard, with five lanes of traffic travelling in alternate directions and at different speeds.

After a brief rest on the riverbank, there are then five more lanes of logs and turtles before safety is reached at one of the five holes.

When all are occupied bonus points are gained and the screens become more difficult. The cars move more quickly and are more frequent.

Things are even worse in

Electron User index of software reviews

Cylon Attack A & F Sphware	Jan 1984
Deaughes & Reversi	
	A STATE
(Acomsolt)	OES SERE
Braw (Micro Power)	Feb 1984
Fefin at the Factory	
(Program Power)	. Jan 198£
Shoses of Geneley Gennmar	
(Magic Software)	Bec 1568
Zicessoppes (Third Program)	_ Jun 1984 1
Meteors (Acomsoft)	Oct 1583
Monsters (Appropriet	Dic 1980
Puncman (Challesoft)	Feb 7554
Sterakip Commant (Acornacts)	Test 1 (881)
Swoog (Program Power)	Cat 1688
Tree of Ricoveredge (Acomson)	Oec (590)
What Makes You Hek?	
(Ship Pregram)	Feb. 1984

the river. Some of the turtlesdive, and many logs turn out to be crocodiles with gaping jaws.

The game has little to make it stand out from its clones. But the graphics are quite presentable, with good use of colour. The key response is quick and positive.

I appreciated the first screen starting at a very easy level - my six-year-old son was able to do well at this initial level, although the crocodiles made him ditch many frogs into a watery GERVA.

Too often, a game starts with a level of difficulty that doesn't allow the young or inexperienced to achieve any success.

Here it is possible to gain

practice on the lower levels to help mount an attack on the author's claimed top score of 12,530.

This is a competent and addictive version, but without special features.

Probably the most used facility will be that which turns off the awful tune and reverts to the original sound effects.

Phil Taylor

Watch out, this caterpillar Caterpillar is carnivorous IJK Software

HAVE you ever felt the need to destroy a defenceless caterpillar? If you haven't so far, now's your chance.

in a variation of the popular arcade game, you control the black, movable weapon at the bottom end of a field of mushrooms.

You are hungry for points. The caterpillar is at the other end, hungry for you.

Hang on to your nerve as you watch it menacingly winding its way towards you, weaving between the mush-

As you move from left to right or up and down you fire at the caterpillar, blasting mushrooms out of the way, scoring

points all the time.

When you hit the lengthy beasty, a segment is destroyed. If you hit it in the centre then it splits into two.

But it still comes towards you. Can you destroy it before it gets you?

While you're watching it come closer, you mustn't forget to fire at a scorpion which occasionally appears. A lot of points can be gained from hitting that particular undesirable.

Watch out, too, for a spider. He's hanging around the bottom of the screen and ready to grab you if you can't shoot or avoid him.



A nice little game, one that has everyone in the room wanting a go - while you're reluctant to let them. Graphics and sound effects are well up to standard.

Graham Parr



With the accent on action...

> IF you're one of these shady characters who can go in a pub or amusement arcade and lose yourself for hours in a Space Invaders or Galaxians game. then this should be right up vour street

There are fast and slow levels - and you take your pick according to how big-headed you feel. Then launch into the

You are a lone, groundbased, tank-like vehicle fighting squadron after squadron of aircraft, all intent on sending you to the big electron cloud in the sky.

The skill lies in dodging the bombs and the descending bombers, who have no fear of

Kamikazi A&F Software

ramming you.

At the same time you are trying to shoot them down. But to add insult to intended injury once you've annihilated one squadron another more challenging one is ready to take its place.

This is not the most original game in the world, but it is certainly well done.

The action is fast and furious with more than adequate sound and graphics.

If you are looking for a classic game to test your nerve and reactions this is for you.

Peter Gray

Are you fed up with shooting aliens, jumping barrels, or hopping over rivers? You are? Then try an adventure

AN adventure is a fantasy world which you, the hero, have to explore, usually with the object of finding treasure or rescuing princesses, and generally being a hero.

Kids stuff? Not at all.

The crafty programmer who's written the game doesn't want you to win too easily. So he makes it as hard as possible, which is often very hard indeed.

Believe me, when you've spent an hour trying to find a key to open a mysterious locked door only to find that the door is locked from the other side, you'll be ready to strengle that programmer.

An adventure is like a detective novel, full of clues, puzzles and red herrings. Your job is to sift the clues, solve the puzzles and, hopefully, recognise the red herrings.

What's more, because you're in a fantasy world, with its own natural laws, you can also have goblins, magic or even aliens to cope with.

Not quite that easy after all, is it?

So where do these adventure games come from? They owe their origins to the Dungeons and Dragons craze that swept America in the mid-1970s.

Two mainframe programmers, Crowther and Woods, wrote a program called Colossal Cave, which simulated a D&D game, but had more emphasis on problem solving and less on fighting monsters.

This quickly achieved cult status among other programmers, and might have remained on mainframes but for an enterprising man called Scott Adams.

He adapted one of these

massive programs to a 16k TRS-80, published it, and the first adventure for a home micro. Adventureland, was released.

Since then many adventures have been written. They can be split into two basic types – graphic and text.

Graphic adventures get their name more from the graphic action in them than the pictures on the screen, though they generally do have graphics of some kind.

They tend to simulate a D&D game very closely, in that you choose the type of role you wish to play, such as warrior, cleric, barbarian, wizard and so on.

On the basis of your choice you're assigned strengths and weaknesses which you exploit to achieve the objectives set in the adventure, like collecting treasure.

Since this treasure is almost invariably in the possession of some monster or other you spend most of your time fighting them. The result is that your progress often seems to depend more on luck than skill.

Text adventures earn their name because they originally consisted of text only, and were based on the same type of format as the original Crowther and Woods game.

Obviously there are now adventures with both text and graphics, so we can say that a strong sword arm is necessary for a graphics game and a lot of thought for a text game.

In this article I shall only be dealing with text adventures.

If they have their own history and are considered to be so good how come you We all know about arcade games, and there are some brilliant versions available for the Electron.

But there are no adventure games in the arcades, so you either come across them by chance or somebody recommends them to you:

You either love them or hate them, and it's very hard to drag away the adventure fanatic from his machine long enough to talk about them.

You must have seen one of these adventure freaks. They're the ones who come to the computer club bleary-eyed from playing their latest game until three in the morning.

Yes, I know you thought he

was an insomniac, but nov you know.

What's so special about these adventure games?

I gave you an idea earlier of the object of them, so let's give you an example from that first Scott Adams game.

The aim is to collect and store 13 treasures. To get one of them you have to wake a sleeping dragon with some bees.

The bees have to be caught in an empty bottle – after you have first covered yourself in mud to stop them stinging

The bottle is full at first and has to be emptied over some lava to get another treasure.

However once you get to





the location where you empty the bottle you need a rug and a magic word to get out. To get the rug you need to rub the lamp in another location.

Not only that, you have to climb down a hole to get the means to light the lamp, which you find by chopping down a tree, after you've first climbed it to get the key which opens the door

Pheyyl Bit involved isn't?

But that's where the attraction lies, in solving the puzzles, progressing through the locations and getting that final message on the screen: "CONGRATULATIONS! YOU ARE A MASTER ADVEN-TURER!

I know it must seem very

complicated, but adventures are totally logical. Admittedly that logic is sometimes very obscure but all the puzzles can

And there is no greater feeling than to solve a problem. that has been stumping you for hours.

Now I've got you interested in them and you're all going to rush out and buy up the shop, let me give you the bad news: ALL adventures are very hard for ALL beginners.

The good news is that they are just like everything else. The more you do them, the better you get. I well remember my first game, and I can assure you it was not a very auspicious beginning.

Some adventures have more than 200 locations, so it is a good idea to make a map of your travels anyway.

Another thing common to most adventures is ending up in the dark, often underground or In unlit rooms. Obviously you need to get a lamp or torch or at least some matches.

Should you come across one in your travels always check to see if you can light it first. Do you need matches or batteries - or oil if it's an' oil

If you do end up in PITCH DARKNESS, try and reverse the move you have just made. If that proves fatal, try and find the lamp and the means of lighting it before you re-visit that location.

If you've got the lamp, try LIGHT LAMP OF ON OF anything else you can think of before moving.

A few other things that might help you which should be obvious are to do with shovels, scenery and ropes.

If you find a shovel it's a good bet that you will have to DIG somewhere, either to find a treasure or to get an object that will help you somewhere else in the adventure.

Examine your surroundings. If you are in a forest, can you climb a tree? Or if you've got an axe, can you chop that tree down? Can you climb a wall, or

If you find a rope it's likely to be needed somewhere, either to climb something or perhaps to pull something.

An object that is too heavy to lift might be pulled if you TIE ROPE and PULL the object.

There are some general tips that are applicable to all adventures.

If the program allows you to save the game - that is, allows you to return to the location you have reached should something you do prove fatal then use it before you enter any suspicious places, or before trying something dangérous.

If something doesn't work, such as taking a bucket stuck in the mud by keying in TAKE BUCKET, then try doing it a couple of times.

These programmers are a crafty bunch, and sometimes make you do a thing a few times before you succeed.

Always read the room descriptions very carefully, sometimes clues are hidden here. Always EXAMINE everything.

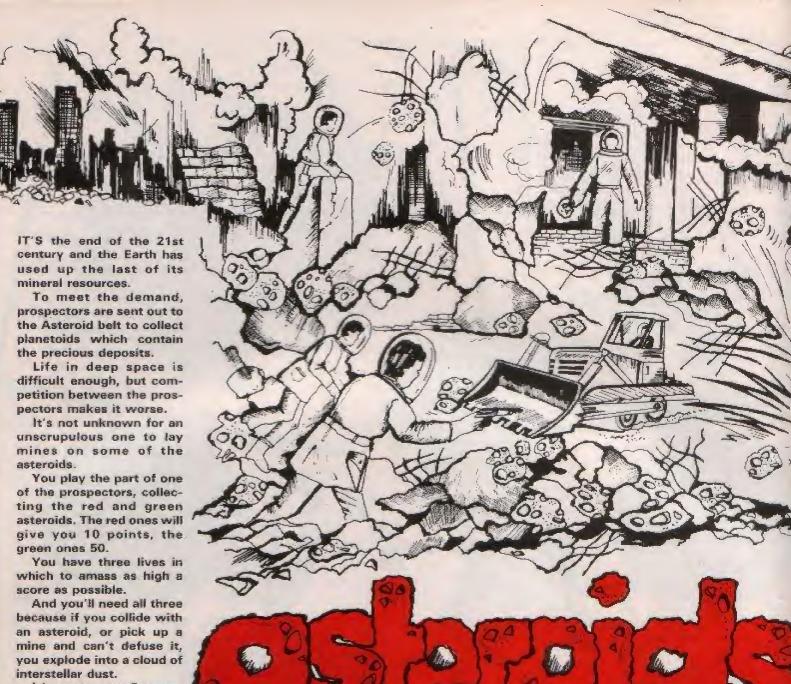
I hope you now have an idea of what adventuring is all about. You never know, maybe we'll be seeing you staggering into the computer club with bleary eyes sometime.

Happy adventuring!

MERLIN







It's up to you. Remember, the Earth needs those

minerals. Good luck!

PROCEDURES

Tests for correct combination entered.

Boopy

Tests whether an asteroid has crashed into Ship explosion. the ship or been collected. The score Crash Hit

Initialises characters and dimensions adjusted.

Initial

Displays the instructions. Moveast Moves the asteroids.

The main procedure. Plots an asteroid. Play

Displays the rocket exhaust. Calculates new positions and directions due Plot Rocket

Sets up the screen display for each new Rotate

Setup ship.

CHARACTER DEFINITIONS

Asteroids Spaceship Rocket exhaust

Character 240. Characters 241 to 248. Character 249. Character 250.

By ERIC H. CRISP

VARIABLES

Score. Combination input.

A\$

Level of difficulty. As game progresses it C% increases the possible speed of the D%

asteroids.

Horizontal speed of an asteroid. Vertical speed of an asteroid. DX%(1%)

DY%(1%) Finished flag: F%

Lives. G%

5%

X%(1%)

Y%(1%)

Z%

Asteroid counter. 1% 1%

Multiplication factor for rotation calcul-K,L

The three letter combination. ations.

Rotation direction of ship -1, 0 or 1, KEY\$ R%

Ship's speed - 0 or 1. T%(1%)

Asteroid type: 1 = red, 2 = green, 6 = mine. X coordinate of an asteroid.

Y coordinate of an asteroid. Time for entering the three letter combi-



This maths workout is based on articles that originally appeared in The Micro User, Our thanks to our "big brother" magazine for permission to use it.

WELCOME to the first in a series of articles in which we hope to take the mystery out of understanding the fundamentals of the Electron's workings.

All too often even competent Basic programmers tend to shy off such topics as binary coding, hexadecimal and assembly language because it seems too "mathematical".

This is a great pity, because the Electron is so constructed that a little knowledge in these fields allows you to take full advantage of its advanced facilities.

The mathematical aspects of the subject aren't at all deep. Certainly anyone who can follow Basic should be able to cope with this series.

If you feel that despite our best efforts we still haven't explained something fully enough, please write in and tell us. We'll try to rectify the situation in later articles.

First we are going to look at binary code.

This is a way of handling numbers essential to our understanding of what goes on inside a computer.

Binary is just a way of

8p

MIKE BIBBY'S

MATHS workout

Exercises for the Electron

coding numbers in a way particularly sultable for computers. It's actually quite simple.

What often confuses beginners is the fact that the binary system codes numbers in a way that can look extremely like the way we normally code numbers.

For example, if you were presented with a number 100, you would probably decode it in your normal way and say it was "one hundred"

That, however, is just one way of interpreting it. If you decided to decode it as a binary number, you would interpret 100 in a completely different way and say it meant the number "four".

(Never mind exactly how you arrived at that conclusion for the moment.)

This is what often causes problems. People are so used to dealing with their numbers

1p

in the normal way that 100 is. always "one hundred" to them. They can't make the binary as "four"

you interpret it as "one hundred" or "four"?

Our rule will be, if you mean

If you wish the number to be decoded as a binary number you put the symbol % in front of it. So 100 means "one hundred" while %100 means "four".

that we have to decode the number in a special way as a binary number.

However before you decode you need a rule for decoding. So how do you get the number "four" from %100? What's the rule?

Let's take a detour for the moment, and think about the coins we use every day. Our currency, until recently, con-

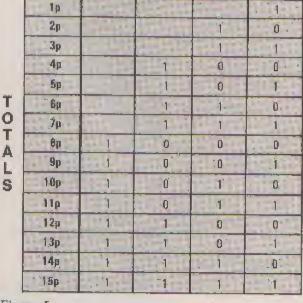
50p, 20p, 10p, 5p, 2p, and 1p (ignoring the half-pence). We can combine them to give

shift necessary to decode it in Actually it is rather ambiguous. Presented with 100, do

our usual way of dealing with numbers (the hundreds, tens and units you learnt at schoolor to put it more formally, the denary system) you write the number in the normal way.

So far so good. We now have a marker (%) to warn us

sisted of these coins: any sum we wish.



COINS

2p



L

S



For example:

75p is 50p + 20p + 5p or 50p + 10p + 10p + 5p and so

We are all familiar with this. Often we use multiples of coins to make up a sum. For example, 5p can be 2p + 2p +

Using the same coin twice, though, often means that we end up carrying unnecessary amounts of change. I for one don't like doing that.

Sometimes, however, with our present coinage system we have to use the same coin twice to obtain certain sums.

You cannot, for instance, make up the sum of 4p without doubling up coins. To avoid repeating coins we would have to invent a 4p coin.

Let's do that. In fact, let's invent a coinage system where you never have to use the same coin twice.

First of all we would need a 1p coin and, of course, a 2p coin. We cannot use 1p + 1p for 2p because it breaks the rule!

Now 3p can be made up of 1p + 2p. But for 4p we'll have to invent a 4p coin.

Equipped with that we can make 5p (4p + 1p), 6p (4p +2p), and 7p (4p + 2p + 1p).

In obtaining 7p we used all our available coins, so now we have to invent an 8p coin.

If you work it out - and I suggest you have a go - you will find that with the coins you have at your disposal (8p. 4p, 2p, 1p) you can make any sum up to 15p. Then you would have to invent a new coin 16n.

Notice how the coins we have created have doubled in value: 1p, 2p, 4p, 8p, 16p. No prizes for guessing what. the next one is.

Let's summarise our results in a table (Figure I). Here I have used the columns to show the coins available and the rows to show how the various totals are made up.

A 1 in a particular column means that we use that column's coin, and 0 means that we don't use it.

Look at the row for 5p. It has 101 on it.

According to our rule this means we pick out the coins 4p and 1p (and NOT 2p) to make up the 5p total:

> 4p 2p 1p O 1 4p + 1p = 5p

Denary Value	Column 8	4	or Bit Value	s 1	Sinary Value
. 1	F	100		1	%1
2		100	1	Ð	%10
3		100	1	1	%11
4 .	43	0.1	0	0	%100 -
5 "		9 1	0	1 0	%101
6	4.7	1	1	0	%110
• 7		1		1	%111
8	1	'Ö' ı	0	0	%1900
, 9	1	0	o	1	%1001
10	10,	Ð.	100	0	%1010
118	1	4	1	1	%1011
. 12	1	00 17	0	0	%1100
13	1	. 11	0	1	%1101
14	1	1, 1	1	0	%1110
15	1 0	W 1 1	1	1	%1111

Figure II

Now let's get back to computers by dropping all this talk about coins and redraw Figure I to show the same information but without referring to money – just numbers.

Figure II is the new table. As you can see, there is fittle change.

We can use this table to encode numbers in general, not just coins. We call this method of encoding the binary system.

Remember, to show that we mean a binary number we precede it with %.

So if you see, for example, %101 means:

That is, we add together the values of the columns containing 1. Look at row 5 of the

table to check it.

Similarly, %1101 would mean 13 in the denary system since:

By new you should be able to work out for yourself why %100 represents four.

From the table, or by using the addition method I've just illustrated, see if you can decode the denary values of the following binary numbers:

> %1001 % 101 % 11 %1101 % 111

You can use the program accompanying this article to check your results.

You've probably noticed by now that in the binary system you only use two symbols, 0 and 1, to encode numbers. Hence binary, bi--for two, as in bicycle.

You can encode any number that you want in binary. Just use more columns (or "bits" as we say in computer jargon), remembering that each new bit is worth double the preceding bit.

However it does get terribly cumbersome. For example, 100 (denary) encoded in binary is %1100100 since:

> 64 32 16 8 4 2 1 % 1 1 0 0 1 0 0 → 64+32+4=100

It is much easier to handle the number in our normal system.

To a computer this presents no problem. The fact that binary only uses two symbols is a bonus because you can represent numbers with a sequence of "switches".

. Switches are what we call "two state". They're either ON or OFF.

If we have a sequence of four switches together we can encode numbers by having them either ON or OFF.

We could use ON to mean a 1, and OFF to mean a 0 in a particular column:

8 4 2 1 ON OFF ON ON →%1011=11

Each of these "switches" represents a bit, and a computer memory is full of bits.

The 6502, which is the microprocessor at the heart of the Electron, deals with 524,288 of them.

To make things simpler, the 6502 handles the bits in groups of eight bits at a time—the group of eight being called a byte.

With this type of organisation the largest number you can store in a byte is 255 since:

128 64 32 16 8 4 2 1 % 1 1 1 1 1 1 1 1 → 128+64+32+16+8+ 4+2+1=255

Of course the computer can handle larger numbers (and not just whole numbers) but to do so it must use more than one byte.

Converting a byte from binary to denary is fairly straightforward. Simply write it down under the appropriate column (or bit) values and add together the value of all the columns in which a 1 occurs.

For example, given %10010101 you translate as follows:

128 64 32 16 8 4 2 1 % 1 0 0 1 0 1 0 1 → 128+16+4+1=149

Going from denary to binary is not at all difficult, but it is rather hard to put into words.

You do it by subtracting from the number you want to encode the value of each column in turn, starting with the highest (i.e. 128, 64, 32 and so on).

If you can subtract a particular column value you put a 1 in that column and continue to subtract the next lower column value from the remainder.

If you cannot manage the subtraction you put a 0 in that column and try to repeat the subtraction with the next lower column number.

So, starting with the highest column number (128 in our case), you: REPEAT

1. Attempt to subtract the

149		128	64	32	16	8	4	2	1
<u>-128</u> 21	128 goes - set to 1	1	7						
21	64,32 can't go - set to 0		0,	0		5			100
-16	16 goes - set it to 1	1 25	*		1	is .			773
5	8 can't go — set to D		1/3			0	300	-	100
4	4 goes - set to 1				14,14		1.6		
1	2 can't go - set to D		1	-	100			0	1771
1	1 goes - set to 1		100			3 17 1	33.9		7
0		% 1	Ô	D	1	10 /	1	B	1

Figure III

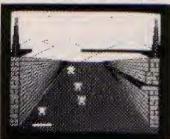
DYNABYTE 🛭

EXPLOSIVE.





new. Lawwing Syndrome



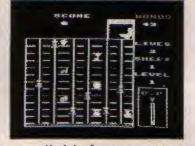
Mad Marco is on the rampage and has blown the bridge to the mainland. The panic-stricken population are herling themselves into the shark intested waters and your job is to bounce them to safety whilst avoiding the marauding sharks and the desperate attempts of Marco to blow up your liferall. This highly priginal, fast and furious game is full of special features and options designed to make your task harder as you get bester.

Machine Code Climbor new!

Caught in the capitalistic pursuit of corporate expansion, your ambition is to attain the ultimate accolade - the key to the executive washroom! Avoid the eager taxmen in the lifts ready to hinder your climb to power and beware of too much stress resulting in high blood pressure. Definitely not for the faint hearted entrepreneur

elevoque

Machine Code. £7.95



Exciting and original software for the Acorn Electron



Classic representation of the classic representation in the real thing incorporating excellent high resolution smooth action graphics for accuracy and making full use of sound. Start practising now and avoid being hustled. You control the due angle and strength of shot. A real pleasure to play,

Machine Code

Horserace

An exciting and colourful game complete in every detail with tumbling jockeys, realistic horses, TV van tote and leader boards, waving crowds and much more, Don't lose your money at the track, try HORSERACE instead, Suitable for 1-6 players.

Basic + M/C 26,95 (All programs require Series 1.05)

Also available:
ELECTRON-AID, An extremely useful 2 program utility which simplifies some of the more difficult aspects of programming your computer.
CHARACTER. Easily defines/edits multicoloured characters. VDU 23 statements are automatically generated and can be saved for later use. Characters also displayed normal size on screen.
SOUND LAB. Experiment with up to 7 envelope and 15 sound commands simultaneously. Sounds can be played individually or in sequence. All parameters clearly displayed and easily altered.
Comes complete with full documentation and a user key strip Excellent value at only £5.95



All programs available from most good computer shops or direct from

DYNABYTE SOFTWARE (Dept. EU4)

31, Topcliffe Mews, Wide Lane, Morley, LS27 8UL.

SAE for Catalogue

(Please include 50p p&p)

Trade Enquiries Phone: 0532-535401

THE HOME COMPUTER SPECIALISTS

WITH MORE BRANCHES THAN ANY OTHER ACORN DEALER WE OFFER

ONE-STOP SHOPPING

FOR YOUR

ELECTRON

AND

BBC MICRO

CALL IN AT YOUR LOCAL BRANCH FOR FRIENDLY ADVICE AND SERVICE.

SEE A COMPLETE DISPLAY OF HARDWARE & SOFTWARE TO BUILD UP YOUR ACORN MICRO SYSTEM

SOFTWARE **PROGRAM POWER** BUG-BYTE SUPERIOR SOFTWARE A&F SIMON HESSEL MOLIMERX ALLIGATA ACORNSOFT

PERIPHERALS

DISCS SINGLE/DUAL TORCH Z80 DISCS **CUMANA DISCS** PRINTERS JOYSTICKS MONITORS B & W/COLOUR LIGHT PENS BBC BUGGY

Large range of books, diskettes, cassettes and printer paper always in stock.

Easy Parking at all branches

TOLWORTH

230 Tolworth Rise South, Tolworth, Surbiton Surrey KT5 9NB Tel: 01-337 4317

SUTTON

30 Station Road, Belmont, Sutton, Surrey SM2 6BS Tel: 01-642 2534

EALING

114 Gunnersbury Avenue, Ealing, London W5 4HB Tel: 01-992 5855

LUTON

1 Manor Road. Caddington, Luton, Beds LU1 4EE Tel: (0582) 458575

MILTON KEYNES

Unit 1. Heathfleid. Stacey Bushes, Milton Keynes MK12 6HP Tel: (0908) 317832

NEWBURY

26 Stanley Road, Newbury, Berks RG14 7PB Tel: (0635) 30047

From Page 37

relevant column number (highest first).

2. IF you succeed then put a 1 in that column number and continue to subtract other columns from the remainder. ELSE put a 0 in that column.

UNTIL all eight columns are covered.

Figure III should make it clearer.

In practice, when faced with encoding a number from denary to binary I tend to do it in my head, seeing which column values will add together to make the sum required, starting with the highest first.

For example, if I were to encode 161 in binary I would say, "Well, I can use 128, so that leaves me 33 to find, 33 can be made up of 32 and 1 so that does it: 128÷32+1=161.

So I encode it as:

128 64 32 16 8 4 2 1 % 1 0 1 0 0 0 0 1 =%10100001

After a while you'll find this

way quite simple.

To finish off, I'll leave you with a program to print out the binary value of a number between 0 and 255 (i.e. that

can be stored in one byte).

Try it with various values and see if you can accept the results.

The program itself uses one

or two ideas, such as AND, that may not be too familiar to you as yet.

Worry not. Watch these pages.

10 REM seresseessannesses

44

20 REM * ELECTRON USER

30 SEM **************

40 HODE -6

50 DN ERROR GOTO 230

40 REPEAT

70 *FX15.1

80 CLS

90 27.=4

100 REPEAT

110 PRINT TAB(0,5) CHR\$ (130)

120 PRINT TAB(1,5); STRINS\$(15,° °)

130 INFBT TAB(1,5) Benary "denary%

140 URTEL denary2>=0 AND denary2<256

150 PRINT FAB(1,12) "X"

160 FOR 12= 7 TO 0

STEP -1

170 PRINT TAB(30-4*1%

1012-17

180 PRINT TAB(30-4*1% ,12)(2^1% AND denary%)/

2/12

190 NEXT

200 PRINT TAB(0,20):

CHR\$ (132) CHR\$ (157) CHR\$ (131) "SPACE TO CONTINUE, ESCAPE TO

END

210 REPEAT UNTIL INKEY (-99)

220 UNTIL FALSE

230 END

This listing was produced using a

special formatter which breaks

one program line over several lines

of listing. When entering a line

don't press Return until you come to the next line number. Full

details of the formatter is given on

Page 4 of the February issue.

This listing is included in this month's cassette tape offer. See order form on Page 43.

PLANE SAILING



Airline

Hijacks, strikes, crashes and spiralling fuel costs must all be overcome it you are to succeed at this game. A wing and a prayer will not be enough to ture your £3 million to £30 million in the time allowed, but your financial wizardry will enable you to take over British Airways, or will it?



Dellas

Can you amass enough petro dollars to take over the Euing empire. Out throat business and an eye for the main chance may get you there but you'll need nerves of steel to overcome the oil king of Dallas.



Corn Cropper

Limited cash and droughts are two of the problems facing the farmer. Planting, fertilizing and harvesting must all be done economically if you are to reap the rewards offered in Corn Cropper. You choose the method that will bring you success.



BUSINESS STRATEGY GAMES - £6.95

Selected titles available from Greens, Boots, Rumbelows and all good computer shops or Cases Computer Simulations Ltd., 14 Langton Way, London SE3 7TL.

NOW AVAILABLE

RIFISCREEN

ALAN PLUME shows you how to create effective screen patterns by drawing just one figure

THIS program produces a frieze, a repeated pattern like the one pictured here. A frieze in its most basic form is simple to produce on an Electron, as it is merely the repeated drawing of one figure.

Creating the figure is probably the most difficult part to understand. Here it is made up of 25 user defined characters, listed in the DATA statements at the end of the program.

By altering them, you will be able to produce your own friezes.

1 REM FRIEZE

15 FOR CX=224 TO 248

30 FOR JX=1 10 15 STEP 2

35 VOU EVAL ("&" +NIDS (AS

55 BS\$=CHR\$ 10+STRING\$15

65 FOR JZ=224 TO 244

70 FCR 17=37 TO 32+4

95 FOR YX=192 TO 832

100 FOR XX=0 10 1240

75 As=As+CHR\$ IX

20 VOU 23, C%

JY, 21)

.CHR\$ 81

SIFP S

85 A\$=A\$+BS\$

STEP 320

STEP 160

105 NOVE XX. YX

110 PRINT AS

40 NEXT

45 NEXT

50 VDH 5

60 ASA

BO MEXT

90 NEXT

25 READ AS

As you'll discover, the black side borders are introduced to mask out the screen wrepround which occurs when printing characters with the text and graphics cursors joined.

Why not use the program to produce your own friezes? You could make a fortune designing your own wallpaper.

All you have to do is to decide on the figure you want repeating and note down the numbers for the VDU 23 statements of all the user defined characters used.

It's just as we do in our

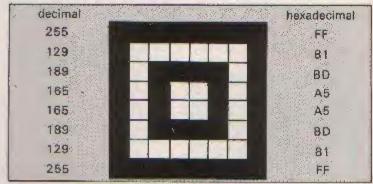


Figure I: Decimal and hexadecimal numbers for the same character

monthly Casting Agency.

The complicated bit is that the program uses 25 user defined characters to make up one figure. It arranges them into one block, using the methods shown in Casting Agency in the November issue of Electron User.

It then prints this block over

210 DATA 0000000000000000

215 DATA 7F00003C02010101

220 DATA 0080404040414343

225 DATA 030F1F3FFFFFFFFE

230 DATA E0E0080898183870

235 DATA 0080909090908887

240 DATA 1C7272F28E8E7C01

245 DATA 47470F1E1801C3E0

250 BATA F8E1071FFFFFFF7C

255 DATA E0E0E0C0C08000000

260 DATA 403F0000000000307

285 DATA 03C3011838F0F2E8

270 DATA ESECCCISFO78070E

275 DATA 0000F00804024140

280 DATA 00000000000000000

285 DATA OFOF IF3F7F7FFFFE

290 DATA CECFCF9F9F3F3E7E

295 DATA 2023202010090402

300 DATA COB070640C180706

395 DATA 00000000000000000

310 DATA F8F1C30F3E000000

315 DATA FCF8E00000000000

320 BATA 0000000000000000

325 BATA 0001000000000000

330 DATA E0D010640C1C0000

This listing is included in

this month's cassette

tape offer. See order

form on Page 43.

205 END

and over again to produce the frieze.

Let's try out a simple pattern. Rather than make up a figure out of 25 user defined characters, we'll just use the same character 25 times over to make up the figure.

Suppose we use the character shown in Figure I, We would define it, just like any other Casting Agency character, with a VDU23 statement. In this case:

VDU23, 224, 255, 129, 189, 165, 165, 189, 129, 255

We use this 25 times to create one block. If I was creating a more complicated block, each user defined character would probably be different.

This would mean some planning on a piece of paper beforehand.

Happily the program saves. us a lot of time and trouble because it will do all the arranging for us.

What we have to do is nut the last eight numbers of the VDU statement into the DATA statements at the end of the program.

Normally we write the numbers after the VDU23,224 in ordinary decimal figures.

However this program makes use of hexadecimal numbers - that is numbers to the base 16.

Don't worry too much about these. We will be covering hexadecimal numbers in a future Maths Workout feature in Electron User.

Use Program II to change

This listing was produced using a 2 REM BY ALLEN RELINE special formatter which breaks 3 REM (C) ELECTRON USER one program line over several lines of listing. When entering a line don't press Return until you come 5 *FV0.1 to the next line number. Full details of the formatter is given on 10 Habe 4 Page 4 of the February issue.

115 NEXT

120 NEXT

125 FOR YX=352 TO 992

STEP 320:

130 FOR XX=-80 TO 1160

STEP 160

135 NOVE XX.YX

140 PRINT AS

145 NEXT

150 NEXT

155 BCOL 0,128

160 VBB 24:0:0:100:1023:16

165 VDU 24, 1180; 0; 1279; 1023; 16

170 SCOL 0,129

175 VDU 24,100;0;1180;24;16

180 VDU 24,100;1000;1180;1023

(16

185 VOU 26

190 MOVE 100.17

: DRAW 100,1023

195 MOVE 1180,17

:DRAW 1180,1023

200 VDU 30

Program I

40 ELECTRON USER April 1984

each of the last eight figures into hexadecimal. You then put these odd looking numbers into the relevant DATA statements, one after the other, with no commas.

We will come to this street we've seen how each of the 25 DATA statements at the end of the program correspond to each of the 25 characters that make up the blocks of the frieze.

But first, key in Program II:

- LO REM PROGRAM II
- 20 REPEAT
- 30 PRINT "ENTER THE MORNAL NUMBER"
- 40 INPUT decime!
- 50 PRINT"THE MEMADECIMAL IS "s"decinal
- 60 UNTIL FALSE

Figure II shows how one of these blocks, or figures, is: made up of 25 user defined characters.

The top left character of the block - numbered ! In the diagram - has its VDU data. which are the last eight numbers converted to hexadecimal, stored after the DATA of line 210.

The next, number 2, has its VDU23 numbers stored in line 215... and so on until the figures for character 25 are stored in line 330.

In my case, I just want my simple pattern repeated 25 times to form a block, so my DATA statements are all the same, as shown in this listing:

If you still cannot see how the characters fit together to make the blocks, try changing the figures in the DATA statements and see what happens to the patterns.

The last eight numbers of the VDU23,224 making up my character have been converted into hexadecimal, using Program II, and placed in the DATA statements, one after the other without commas.

The 255 becomes FF, 129 becomes 81 and so on. This means that:

255,129,189,165, 165,189,129,255

becomes;

FF81BDA5A5BD81FF

Now when I run the main program with these altered DATA lines I get a brand new

pattern. This is far easier to do than describe.

At first, just try your hands at simple patterns like mine. Then as you get more confident try more complicated figures.

It's great fun, and shows just one way in which your Electron can be used as a design tool. I look forward to the results.

1	2	3	4	5
line	line	line	line	line
210	215	220	225	230
6	7	8	9	10
line	line	Iline	line	line
235	240	245	250	255
11	12	13	14	15
line	line	Ilné	line	line
260	265	270	275	280
16	17	18	19	20
line	line	line	line	line
285	290	295	300	305
21	22	23	24	25

line

320

Figure II: One block of 25 characters and the lines where their data is stored

line

315

310

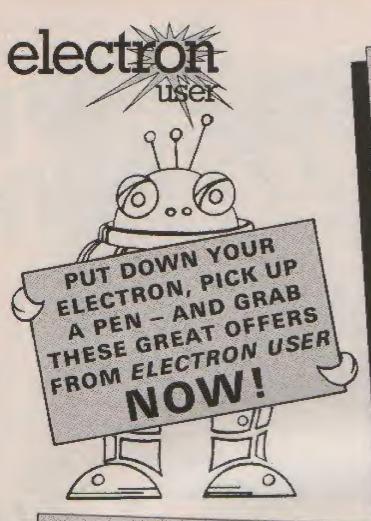
	orders are made realing.	Page 1 sec	mes i get a brand new
210	DATAFF818DASASBOSIFF	275	DATAFFB18DA5A5BDB1FF
215	BATAFF8180A5A58081FF	280	DATAFF81BDASASBD81FF
220	DATAFFELSDASASSD81FF	285	DATAFF818DA5A58081FF
225	DATAFF8180A5A58081FF	290	DATAFF818DA5A5BD81FF
230	DATAFF8189ASA58081FF	295	DATAFF81BDA5A5BD81FF
235	DATAFF8180ASAS9081FF	300	DATAFF818DA5A58D81FF
240	DATAFF8180A5A58981FF	305	DATAFFB1BDA5A5BD81FF
245	DATAFF815DA5A5B091FF	310	DATAFF818DASA58D81FF
250	DATAFF818DA5A58081FF	315	DATAFF818DA5A58D81FF
255	DATAFFB180A5A5B081FF	320	DATAFF81BDA5A5BD81FF
260	DATAFF8180A5A58081FF	325	DATAFF918DA5A58D81FF
265	DATAFF818DASASBOB1FF	330	DATAFF8180A5A5B081FF
270	DATAFF818DASA58D81FF	11.5	The state of the s

line

330

line

325



Be one of the first to get each issue

A subscription will ensure you get your own personal copy HOT OFF THE PRESSES month after month for the next year.

Every owner of an Electron—and everyone thinking of buying one—needs to get Electron User every month. It's the brightest, most authoritative yet completely independent guide to a machine that has so much potential you will never tire of reading about its remarkable capabilities.

You can buy Electron User from your local newsagent or station bookstall. Or you can take out a 12 months subscription and have it delivered to you by post.



Your Electron needs protecting!

Protect your Electron with our luxury dust cover made of soft pliable water-resistant vinyl, bound with strong cotton and decorated with Electron User logo. £3.95

Keep your collection of *Electron User* complete with these handsome binders

Bound in attractive red pvc with the *Electron User* logo in gold blocking on the spine, this binder will hold 12 magazines firmly secured in place by metal rods. £3.95



ORDER FOR

All prices include postage, packing and VAT, and are valid to April 27.

Please enter number

required in box

Electron User annual subscription

EIRE £13 (IR £15) Overseas (Surface) f.20 Overseas (Airmail) £40

Commence with... issue

Electron User introductory issues

Complete set of 4 £1.50 UK £1.75 Overseas (Surface) TOTAL

Electron User back issues

February £1.25 UK £1.50 Overseas (Surface) Airmail prices on application

Electron User tapes

26 introductory programs (UK & Overseas) Luna: Lander: February Chicken. March

Spacehike. April

TOTAL

Dust Cover

f3.95 (UK & Oversess)

TOTAL

Binder

£3.95 UK £5.00 Overseas

TOTAL

Payment: please indicate method (/)

TOTAL

Access/Mastercharge/Eurocard Barclaycard/Visa American Express

Card No. __

Expiry Date __

Cheque/PO made payable to Database Publications Ltd

Address _

Send to: Electron User, FREEPOST, Europa House, 68 Chaster Road, Hazel Grove, Stockport SK7 5NY.

(No stamp needed if posted in UK) Please allows 28 days for delivery

You can also order by phone

Telephone: 061-480 0171

Don't forget to quote your credit card number and give your full address

MCMLXXXIV

If you thought your micro had more to do with the future than the past, let MIKE MAHON show you how to conquer those ancient Roman numerals

YOU may be a whizz at decimal arithmetic or can think in hexadecimal and binary. But how quickly did you work out the title of this article?

The program listing given here will let you do just that — convert Roman numerals to decimal and vice-versa. But more about the program later.

The Romans used a sevencharacter – septal – system for numeration. These characters and their decimal equivalents are shown in Table I.

Initially the Romans themselves used up to four characters of any one type to make up a number, such as IIII for 4.

But modern usage is based on the subtractive system whereby only three characters of a type are used together and then one is subtracted from the next higher value, like III for 3 and IV for 4. We will be using the subtractive system here.

Did you know that the largest number you can have using this system is 3999? The program described here works in whole numbers — integers — from 1 to 3999.

Do you know that the longest roman numeral is 15 characters long? The answer to this, and some other frequently used figures, is

given in Table II.

The program is written in BBC Basic and may be said to be structured in that it is made up of separate modules.

It does not use GOTO or GOSUB or refer to line numbers within it, and the main variables and procedures are reasonably self explanatory.

This should enable the user to readily modify the program for his or her own needs, such as by adding routines for testing and scoring pupils or for printouts.

The main program occupies lines 100-200, most of which is concerned with precautionary features such as switching off the cassette motor and printer, if available, and disabling the auto repeat, cursor editing and copy key functions.

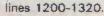
It also forces the program to re-run if either the Break or Escape keys are pressed.

The only way to exit the program and reset all the functions to normal is to press the Control and Break keys together.

The rest of the program is in the procedures, which are listed and explained in Table

The main algorithm – the programmed formula – for decimal to Roman conversion is in line 730. This steps through the decimal number and picks out the appropriate roman characters from the data table fed into the array romans.

The other algorithm, for Roman to decimal conversion, is a little longer and resides in



The majority of the program is concerned with — as usual — trapping user errors and presenting information on the screen.

Most problems are catered for and only valid inputs are allowed. It is, however, essential to use the Electron with the Caps lock ON and the Shift lock OFF as at switch on. It is left as an exercise to the reader to find a way around these problems.

Also, what about adding a routine of your own for converting hexadecimal to Roman numerals using the inbuilt facilities of your micro.

Oh - the title of this article? 1984 of course!

Roman I V X L C D M Decimal 1 5 10 50 100 500 1000.

Table I

Decimal	Comment	Roman
1	Smallest =	
3999	Largest	MMMCMXCIX
3888	Longest	MMMDCCCLXXXVIII
1066	Battle of Hastings	MLXVI
1969	Men on the Moon	MCMLXIX
1983	Birth of Micro User.	MCMLXXXIII
	& Electron User	
2000	The next century	MM :

Table II

1- 004	nooroupeo
	PROCEDURES
PROCdate	Fills array roman\$ with all the valid
	Roman numeral character groups in
	units, tens, hundreds and thousands
PROCtitle	Displays the program title and lists
	the three options available.
PROCdecinput	Receives decimal input for conver-
	sion to a Roman numeral.
PROCdecanalyse	Converts decimal input dec to
	equivalent Roman numera
	romnum\$.
PROCromaninput	Receives your Roman numeral RNS
	for conversion to a decimal number
PROCromananalyse	Converts a Roman numeral to a
	decimal number.
PROClist	Lists decimal and Roman numbers in
	the range specified by start and
	finish.
PROCcheckinput	Allows only the 10 valid decimal and
	7 valid Roman characters to be
	entered.
PROCinvalid	Tells you that your entry is not valid
	for example not in the range 1 to
	3999.
PROCreturn	Displays message to terminate you
	input.
PROCpause	Waits for you to have another go to
	change your option.

Table III

100 REM ROMAN NUMERALS 1200 DEF PROCromananalyse This listing was produced using a special 1210 L=LEN (RN\$) 110 REM Mike Mahon formatter which breaks one program line over :DEC=0 120 REM (C) ELECTRON USER several lines of listing. When entering a line don't 130 VDU 3 1220 N=0 press Return until you come to the next line number. Full details of the formatter are given on : REPEAT : *MOTOR O Page 4 of the February issue. : NaN+1 135 #F \$4.1. 140 *KEY10 OLDIN RUNIM CIE MIDE (RNE, L, L) = HTK 145 *FX11,0 THEN DECEDEC+1 150 MODE 6 160 ON ERROR RUN :LaLat FUNTIL LEO OR NES 170 BIM romans (4, 10) :roachar*="" 920 REPEAT 1230 IF NID# (RM# L 1) = "V" 180 PROCdata :romnum\$="" : key=GET 190 PROCtitle :UNTIL key=13 720 FOR rowX= LEN (dec\$) THEN DEC=BEC+5 200 END 930 ENDPROC TO 1 STEP -1 stek-1 499 999 500 DEF PROCdata 725 pos=pos+4 :IF MIDS(RNS,L,S)= 1000 DEF PROCLISE HTH: 730 reacharterement(reml 510 DATA 0, 1, 11, 111, 17 1005 okay\$="1234567890" .VAL (MID\$1dec\$, pos THEN DEC-DEC-1 IN MILESTIN IN W. :maxlen=4 520 BAFA O, X, KI, KKI, KL (4) 11 11=1-1 1010 CLS 735 IF ronchars="0" 1240 N=0 LLX, LXX, LXX, LXXX, EE : PROCreturn THEN roucharses : REPEAT 530 DATA 0,0,00,000.00 :PRINT TAB(2,2) Enter , D, DC, DCC, DCCC, CF 740 romoun\$=romoun\$+romchar\$: N=N+1 range (decimal): START 750 NEXT : IF MID*(RN#, L, 1) = 540 DATA C.M. MM. MMM. I 8.4 760 ENDEROC иха ,0,0,0,0,0 :PROCcheckingut 799 550 SOR row%=1 10 4 THEN SEC-DEC: 10 istart=VAL (string\$) 800 DEF PROCromaniaput :Lal-1 (FOR coll= 0 TO 9 : PRINT TAB (25, 3) TEINISH 810 okays="IVXLC2N" : IF MID# (RN#, L, 1)= FREAD TOWART FORD **电流** 法下流 明节度 disnelyan: .col XI :PROScheckinput 820 CL5 THEN DEC-BEC-1 : NEXT :PROCreturn :finish=VAL (string#) 11:1-1 INEXT 1020 IF start(1 OR start)399 (PRINT TABI2, S) "Enter 560 ENDPROC 1 N=N-1 9 OR finish(1 OR finish Roman numeral 1250 UNTIL L=0 OR N=3. >3999 OR finish(start :PROScheckinput 1260 IF MID\$ (RN\$, L, 1)="L" 600 DEF PROCESCIADUT 605 okay#="1234567890" :RN\$=string\$ THEN PROCinvalid 850 PROCromanahalyse imaxlen=4 THEN DEC=DEC+50 :PROClist Sao IF DECK1 OR DEC)3999 610 CLS :1=1-1 1030 start=INT (start) * PROCretura : IF #ID\$ (8N\$, L, 1) = :finish=INT (finish) THEN PROCinvalid W X W PRINT TAB(2.5) Enter 1035 (F finish-start >15 :PROGramaminaut Decimal ausber ": THEN BEC=DEC-10: 365 dec=0EC 11=1-1 : PROCeheckisput ;#RDDdecanalyse THEM VOUL & :dec=VAL (strings) 1270 NFO :PRINT TAB(1,22) Press all RMs () roomuns 620 IF dec (1 08 dec JTPFF REPEAT SHIFT to Scroll page GR dec()INT (dec) I MANAGE Washington March : 18 NED\$ (RN\$, L , 1) = THER PROSinvalid 1040 VOU 28,5,20,38,5 THEN PROCERYALIS :PROCramaninput HOH: 1050 FOR decestart TO finish 170 PRINT TABLE, 61 Decidal :PROCeecimput THEN DEC-BEC-100 momber *1050 : PROCdecanalyse . 630 PROCdecanalyse. : IF MED\$ (AN\$, E, 1) = 1060 PRINT TAB(5); dec; SEC PROCeause 440 PRINT TAB(B, 8) Reman TAB(15); rounue\$:FOLCrosenioput нув numeral "trapque! 1070 NEXT STO ENOPRICO THEN DEC-BES-10 650 PROCpause 1080 VDU 26 BAT :PRGCdecinput : -1-1 : V9U 15 900 DEF PROCesuse 1-H=H: 1090 PROCpause 905 AFX15,0 --1290 UNITL L=0 OR N=3 :PROClist 700 DEF PROSdecanalyse PEG PRIME TABLE, 22) Press 1290 IF #ID# (RN#, L, 11="0" 1100 ENDPROC ESCAPE for MENU RETUR 710 dec\$=STR\$ (dec) 1199 N for sore" :005=0

Roman Numerals listing

From Page 45

THEN DEC=DEC+500
:L=L-1
:IF M:D\$(RN\$,L;1)=
"C"
THEN DEC=DEC-100
:L=L-1
1300 N=0
:REPEAT
:N=N+1
:IF M:D\$(RN\$,L,1)=

:N=N+1 :IF MID\$(RN\$,L,1)= "N" THEN DEC=DEC+1000 :L=L-1 :IF MID\$(RN\$,L,1)= "C"

THEN DEC-DEC-100 :L=L-1 :N=N-1 1310 UNTEL L=0 OR N=3 1320 ENDPROC 1999

2000 DEF PROCtitle

2010 CLS

2015 VOU 19,1,3,0,0,0

2020 PRINT TAB(10,5)" ROMAN

NUMERALS".

2040 PRINT [AB(8,10)"1

Decimal"to Roman"

2050 PRINT. TAB(8, (2) "2

Roman to Decimal"

2060 PRINT TAB(B.14) "3

Listing of Roman"

2076 VDU 19,1,2,0,0,0

:PRINT TAB(0,17)

Select appropriate

option ";

2080 REPEAT

:option\$=GET\$

:UNTIL option#="1"

OR option\$⇒°2°

DR option\$="3"

2085 VDU 19,1,7,0,0,0

2090 IF option#="1"

THEN PROCHECINDUL

2100 IF option*="2"

THEN PROGramanianut
2110 IF option\$="3"

THEN PROCEIST

2199

2200 DEF PROCinvalid

2210 VDU 7.7

:CLS

:VDU 19,1,11,0,0;0

:PRINT TAB(14,10) "INVAL

ID ENTRY"

2220 TIME =0

REPEAT

:UNTIL TIME =200

2230 VOU 20

: ENDPROC

2799

2300 DEF PROCemeckinput

2315 string\$=**

REPEAT

2320 REPEAT

:key\$=GET\$

:UNTIL INSTRUCKBY\$

,key\$) 30 GR key\$=

CHR\$ (13)

2330 PRINT keys;

: LF keys () CHR\$ (13)

THEN strings-strings-ke

V\$1

2340 UNTIL key\$= CHR\$ (13)

OR LEN (strings)

>= maxlen

2350 ENDPROC

2399

2400 DEF PROCreturn

2410 PRINT TAB(1,22) "Press

RETURN to input entry

: ENDPROC

This listing is included in this month's cassette tape offer. See order form on Page 43,

EPIC ADVENTURES

FULL-SCALE MACHINE CODE ADVENTURES FOR THE BBC AND ELECTRON

DUR AMAZING NEW ADVENTURE IS NOW AVAILABLE

THE WHEEL OF FORTUNE

They said it couldn't be done on the Beeb — but we've done it!

The Wheel of Fortune is a classic puzzzle adventure, with 250 locations, and brings the following advanced features together for the first time:-

Suphisticated language and speech interpreters capable of accepting single or multiple commands, up to 254 characters in length. Complex multiple commands are phrased just as you would speak them.

Moving characters with varying moods. These characters remain active whether you type anything or not. Their reactions to you will depend upon the way in which you have previously treated them. The speech interpreter allows you to talk to them, to either give them commands or information, or to ask them questions.

Instant helf-screen teletext graphics for each location (BBC only). These remain on screen with the text and both may be studied simultaneously. The graphics may be switched on or off, as required.

You may save your position on tape OR DISC, using a different filename for each position.

Up to 10 commonly-used command sentences can be stored and called up as required.

The stored sentences may be changed during the game.

* No frustrating illogical mazes * Humorous character behaviour * Scoring * Fast response * Fully disc compatible * Etc. Etc.

This mosterpiece of programming is available for BBC or Electron (state which) for only £9.86 Also available are our 3 popular and odventures. Each has approx. 23D locations and costs just £7.95 1) Castle Frankesstein 2) The Quest for the Holy Grail 3) The Kingdom of Klein P&P FREE if ordering 2 or more genes, otherwise and 50p

EPIC SOFTWARE

10 GLADSTONE STREET, KIBWORTH BEAUCHAMP, LEICESTER LES OHL

Please make cheques payable to EPIC SQFTWARE All our programs are available for immediate despatch

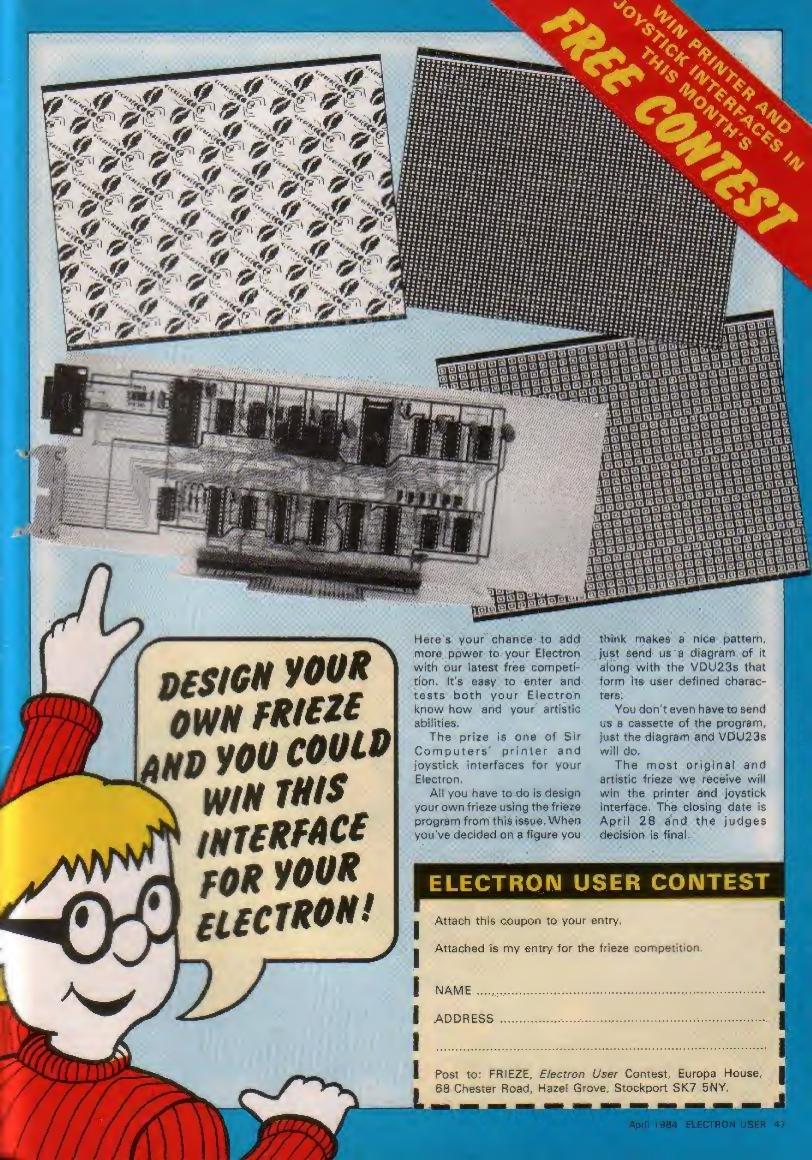
Dealer enquiries welcome

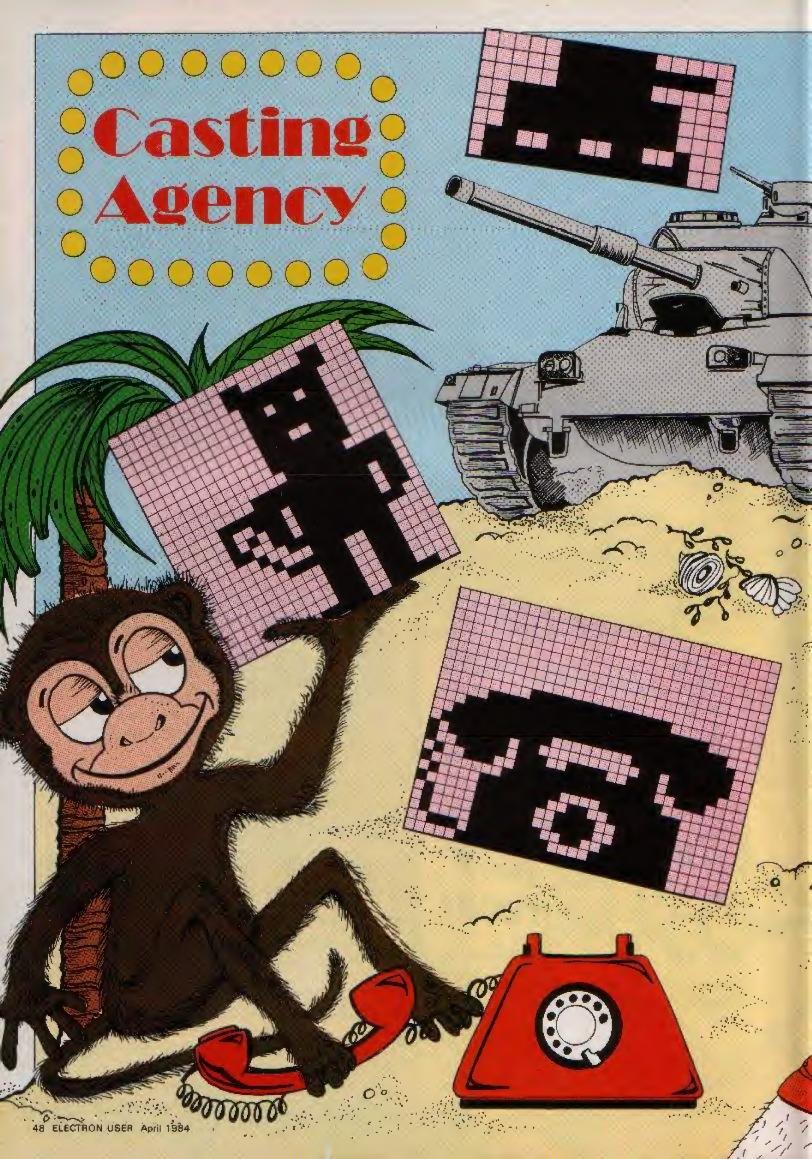
TO DO WITH THE electron

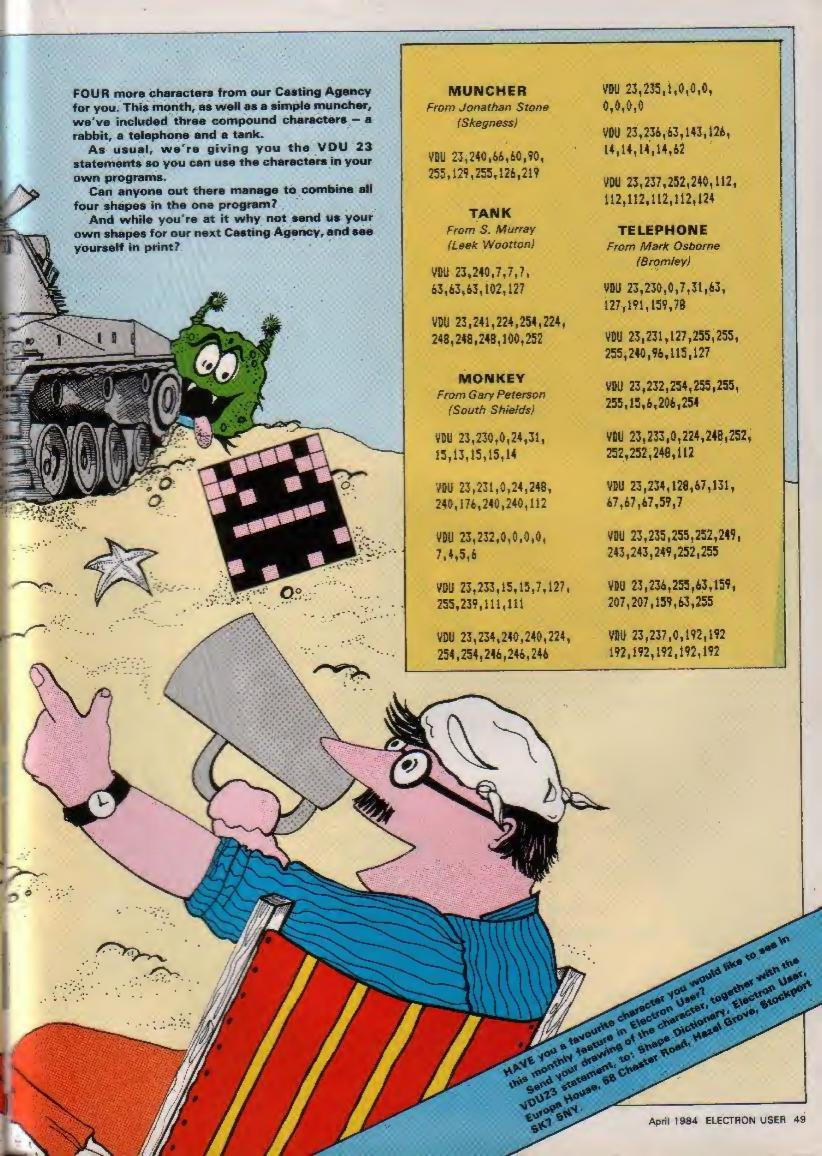
H.C.C.S.
ASSOCIATES

533 Durham Road, Low Fell, Gateshead, Tyne & Wear NE9 5EY. Tel: (0632) 821924

Retail Sales also at: H.C.C.S. Microcomputers 122 Darwen Street, Blackburn, Lancs. Tel: (0254) 672214







SPACEHIKE is an arcade type game loosely based on the arcade classic Frogger but with some new and interesting graphics.

The object is to get four spacemen back to their home base at the top of the screen.

They have to avoid monsters on the bottom four tows, take a rest, and then hitch a ride on various spaceships in the next rows to jump home.

It's quite safe to land anywhere on a spaceship. You don't get killed if you are on the first or last block unlike in many of the professional games. This makes it slightly easier for younger players.

You have three lives to accomplish your journey. When all four home bases are filled you move on to a harder level.

Level 10 is the most difficult, and if you get through it you are given suitable congratulations.

The levels become harder by blocking in the rest area from the edges and also by increasing the speed of the game.

Every time your score increases by 1000 you get an extra life. Ten points are scored for each jump up.

When all your lives are used up the acreen is cleared and the hi score, your score and the level are displayed.

You then have the option of another game, and also that of sound or silent running. This can be an advantage if you want to



play in a crowded room.

If you choose silent running you lose a rather nice jingle every time your spaceman reaches home base and other appropriate sounds throughout the

HINTS ON TYPING IN:

- Omit line 10 until all errors are found, as this disables the Escape key.
- If you want to increase the speed omit line 360.
- If you want a barder game add two extra lines.

192 PROCMOVESPACRAFY (RGX)

:RO%=ROX+E

: IF ROX=10 ROX=0

197 PROCSPLATCHECK

PROCINIT PROCSCREEN PROCMOVEYOU PROCMOVESPACRAFT(N)

PROCSPLATCHECK

PROCDEAD PROCEND

PROCWELLDONE

PROCHOME

PROCDELETE PROCSPA(N)

PROCMOVEYONSPA

Major procedures Initialises variables

Draws screen

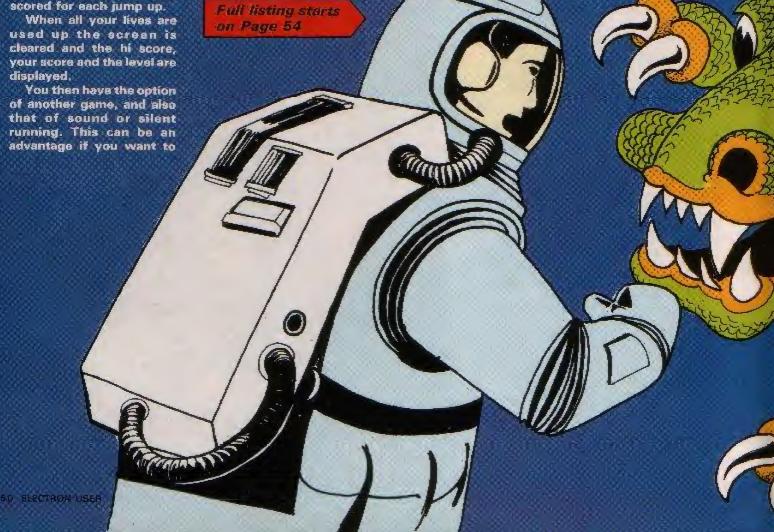
Moves the man Moves road N in the right

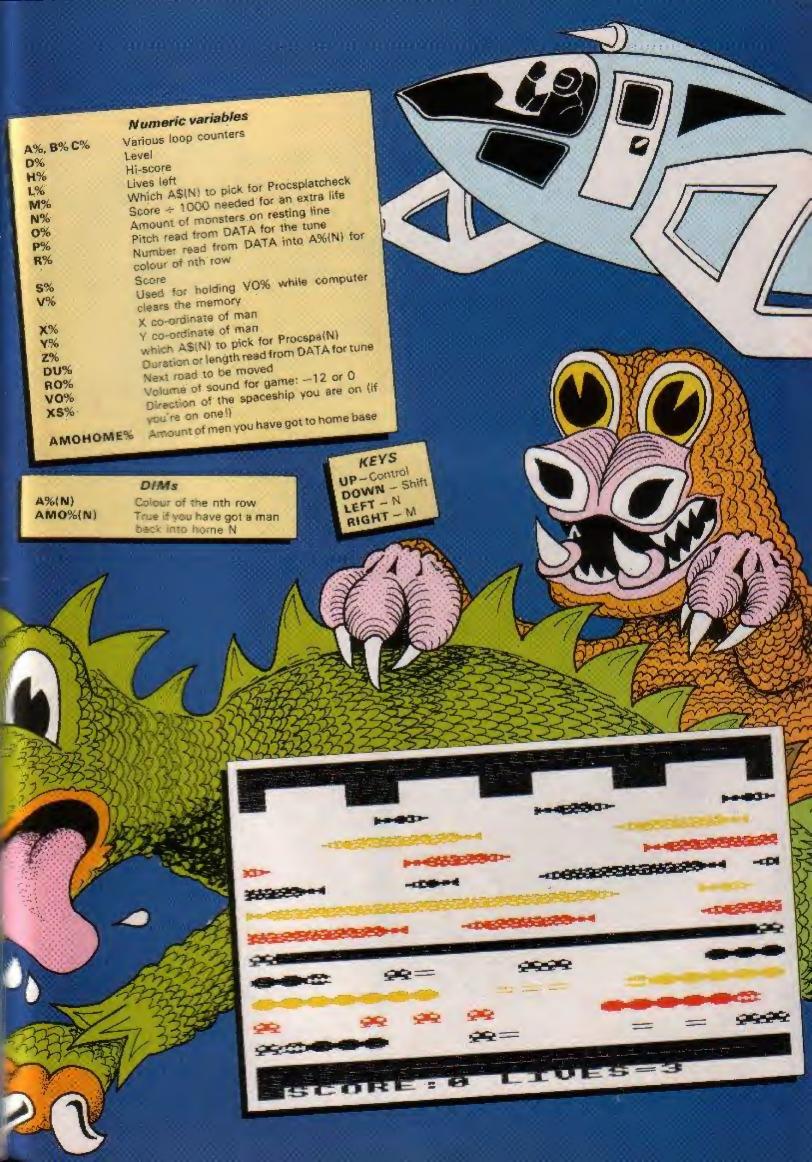
direction Checks whether or not you are dead

Kills you in a suitable way Displays score, hi-score and your level

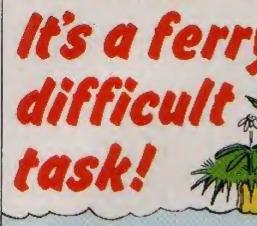
Congratulates you appropriately if you beat Level 10 Checks whether you have jumped into an empty hole Fills in where you were last Prints AS(N) at the right

position Moves you on the space-





Get the dog, duck and grain across the river - but this game by PETE DAVIDSON isn't as simple as it looks. In fact . . .



REMEMBER the old paper and pencil puzzle "Dog, Duck and Grain"? Well, here's the Electron version to tease and test you.

You have to ferry the animals and the grain across the river. But the problem is that once you get in the boat there's only enough room left to carry one of the three.

If you leave the dog behind with the duck, then the duck becomes the dog's dinner. If you leave the duck alone with the grain, then the grain soon becomes the duck's dinner.

And you've got to get them all across the river before you can have your dinner!

Can you do it before you're reduced to eating the duck yourself? How many goes will it take you to solve the Electron "Dog, Duck and Grain" puzzle?

Two variables (SIDE(0)) and SIDE(1)) contain a number from 0 to 7 representing the objects on the left hand side (0) and right hand side (1) of the river.

If they are thought of as

binary numbers, then the bits represent the grain, the duck and the dog.

For example, SIDE(0)=7 (111 in binary) means that all three are on the left.

\$1DE(0)=5 (101) and SIDE(1)=2 (010) means the dog and grain are on the left, with the duck on the right.

By using the logical operators AND, OR and EOR it is possible to check what is on any side, and remove or put in objects.

PROCEDURES

PROCINSTRUCTIONS PROCINIT

PROCWHICH(p)

PROCCHECK(P)

PROCMOVERIGHT

PROCMOVELEFT

PROCDISPLAY(p1,p2)

PROCSHIFT(a,b)

Prints out the instructions.
Defines the characters, initialises SIDE(0) and SIDE(1) (the objects on each side).
RESULT (0 unless you lose), and TRY (the number of times you cross the river). The procedure also draws the initial picture on the screen.
The parameter p is the value of SIDE(0) or SIDE(1) and this procedure selects the object you want to move and checks it is actually there.

Checks the combination of objects left on the side determined by P (0 is left and 1 is right).

This procedure removes the selected object from the left (changes SIDE(0)) and puts it on the right; It calls PROCDIS-PLAY at appropriate times to show the positions of the objects on the screen, it also calls PROCSHIFT to show the boat moving.

Works like PROCMOVERIGHT to remove objects from the right bank and put them on the left bank.

Writes the objects determined by p1 in column p2 on the screen. For example, PROC-DISPLAY(7,0) writes all three on the left of the screen.

Moves the boat from a to b. Prints out the results.

1...DOG
2...DUCK
3...GRAIH
4...MAN ALONE
WHICH PO YOU WANT TO

10 REM DOG, DUCK, GRAIN 20 REN (C) ELECTRON USER 30 MODE & : PROCENSTRUCTIONS 40 DIM SIDE(2) :MODE 2 SO PROCENT &C RESEAT 70 PROCHHICH(SIDE(SID 80 PROCMOVERISHT 90 PROCCHECK (0) 100 SOUND 0,0,0.1 MO, IF RESULT (100R SIDE (1) = 7 THEN 156 120 PROCHMICHMEDICALLY 130 RROCHOVELEFF 140 PROCCHECK (5) 150 UNTIL SIDEALD=FORFRESULTO 10 160 PROCRESULTS 170 COLOUR 5 180 PRINE "DO YOU WANT AMOSH ER" "GOT" EREPLY SEGETS " IF REPLYS = "I'" THEN RUN ELSE OF REPLACE! THEN . VOW 7 #6010 F66 ELSE MODE & ; END 190 DEF PROCESSIT 200 VDU 23:8207:0:0:0:0: 210 Vet 23,224,0,0,5,5,5,6 165,106,60 230 VDU 23,225,24,74,48 255,258,20,20,60 230 VDU 23,228,0,2,2,750 254,40,40,120 240 404 23,227,0,31,65.127 ,63,31,9,15 250 VBU 23,228,0,24,188 ,255,188,24,0,6 260 VOU 23,229,12,7,7,7 ,7,7,7,7 270 VDU 23,230,48,224,224 ,224,224,224,224,224 280 ENVELOPE 2,2,6,9,0,255 ,0,0,125,0,0,-126,126 1125 290 SIDE(0)=7 :5108(1)=0 300 RESULT=0

:TRYS=0

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

330 PLOT 140,400 340 PLOT 81,560,9 350 PLOT 1,0,-600 340 PLOT 81, -560,0 370 GESL 3.2 380 PROCDISPLAY(7,0) 390 VDU.S. #MOVE 328;764 : 400, 224, 4 400 ENDPAGE 410 DEF PROCHHICK(SIDE) 420 COLOUR 6 :TRYS=TRYS+1 430 FRINT TAB(0:20)*1.1.10GG** "2... DUCK; ""3... GRAIN"" """ ... MAN ALONE" 440 COLQUE, 5 450 PRINT TAB(6,26) "WHICH DO YOU WANT TO MOVE (1-4) : 45315, 1 460 OBJECT-SET -49 : SF OBJECT(OGR GSJECT)3 THEN VOU 7 :6070.460 470 08SECT=2**OBSECT1 ANS 7 : IF (OBJECT AND SIDE) (>OB JECT THEN VOU 7 :60T0 460

480 PRINT FAB(0,29)SPC (35)

510 SIDE(0)=SIDE(0)EDR OBJECT

:PROCEISPLAY (SIDE (O)

:SIDE(1)=SIDE(1)OR OBJECT

500 DEF PROCMOVERIGHT

520 PROCSHIFT(328,856)

530 PAGCDISFLAY (SIDE (1)

550 DEF PROCERECK (POSITION)

490 ENDPROC

,15)

540 ENBPROC

310 BEG& G.4

320 MOVE 350, 400

SAO IF SIDE (FOSITION) = 7 AND POSITION=0 THEN RESULTES 576 TF BIBE (POSITION)=3 THEN RESULTED 580 IF SIDE (POSITION) = 5 THEN RESULTED 590 ENGPROC **800 DEF PROCMOVELEFT** \$10 SIBE(1)≈SIDE(1)EDR. @BJECT :PROCDISPLAY(SIDE(1) :SIDE(0)=SIDE(0)OR GBJECT 620 PRECSHIFT(964,336) 630 PROCDISPLAY(SIDE(O) ,08 640 ENEPROC 250 DEF PROCRESULTS 660 PRINT TAB(0,20)SPC (180) TABS0,207; 670 COLOUR 1 680 IF RESULT=0 THEN PRINT "WELL DONE" ELSE 720 690 SOUND 1,2,4,50 700 PRINT "YOU CROSSED " STRE (TRYS)" TIMES" : IF TRYS=7PRINT "THE BEST POSSIBLE!! ELSE PRINT ""IT IS POSSIB LE IN 7º :ENDPROC 710 ENDPROC 720 COLOUR 2 730 IF RESULT-ZERENT "THE DUCK ATE THE" " "GRAIN" 740 IF RESULTRIPRINT "THE DOG ATE THE """DUCK" 750 SOUND 0,-15,2,10

760 ENDPROC

780 Vall 5

FINISH)

ELSE GAP=8

770 DEF PROCSHIFT (START

790 IF START)FINISH BAP = -8

800 FOR I=START TO FINISH STEP GAP 810 SGUNE 0,-15,6,1 \$20 SOUND 9,0,0,2 930 MOVE 1,764 : VBU 224 840 MOVE . 146AR , 764 950 4FX19 969 VOU 224 970 NEXT 880 VBU 4 890 ENDPRSE 900 DEF PROCEISPLAY (CBJECT , POS!TION) 910 FOR IX-010 7 920 COLOUR 1741 930 PRINT TABOPOSITION, 2+00%+ 1183); : 05 (083ECT AND 201%)=(20 12) 900 32, 225+12+2, 226+12 #7 ELSE PRINT SPC (5) 940 NEXT 950 ENOPROC 960 DEF PROCINSTRUCTIONS 970 PRINT 'SPC (5) "THE 006, DUCK, & CORN PUZZLE" SPC (5) STRING# (28, "+") 980 PRINT "Ferry the dog, the duck, and the corn' "to the other side of . the civer."" "At no time must you leave the dog alone" "with the duck, or the duck with the """corn." 990 PRINT "SPE (8: PRESS ANY KEYP : *FX15,1 1000 A=6ET= 1010 ENBPROC



This listing is included in this month's cassette tape offer. See order form on Page 43

From Page 51

5 REM - IC) ELECTRON USER 10 +FX14.6

20 ON ERROR NODE 6

REPGRT

:PRINT " at line ";

ERL

: END

30 VOX=-12

: H%=0

40 VX=V0X

: CLEAR

: MGDE I

: VOX=VY

: COLDUR 2

:PRINT

SPACE HIKE"

PRINT " BY MARTIN

HOLLIS".

50 PRINT " FOR THE

ACORN electron

aCOLOUR 1

60 PRINT . The object

is to fill the top.

holes by going

past the four moving

rows of monsters

and then hitching

rides on the six

rows of space ships

only to jump into

an empty hole right

at the top . When

all four .";

70 PRINT "holes at the

top are filled

, you then pass onto

a harder level"

80 PRINT " Good luck! .

90 PRINT " KEYSP

PRINT "CIRL,....

= UP" "SHIFT.....

F DOWN "N.

= LEFT "MM.

= RIGHT'

100 PRINT: Press any key to start or & for.

quiet or S for sound";

: G\$=GET\$

: IF G\$="Q" OR 63="0"

THER VOXED

ELSE IF 64=15"

DR G\$="5" THEN YOX=-12

110 DX=0

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

:123 :SOTO 110 : 5X=0 230 BEF PROCINIT : N%=0 :DIM AZ (9) :0%=1 : RESTORE, 700. 120 VOU 23.224, 36, 126 FOR AX=OTO 9 ,153,153,255,126,56 : READ RY ,231,23,225,80,110 :AZ(AX)=RX ,255,85,1,65,255,60 : NEXT : VDU 23, 226, 60, 126 :01H A\$(9) ,255,255,255,255,126 :A1#=CHR# (224) .60,23,233,0,0,126 : A2#=CHR\$ (225) .0,0,126,0,0,23,255 :A3#=CHR# (227) ,28,28,8,127,8,20 : A4#=CHR# (226) ,34,65 :A5\$=CHR\$ (233) 130 VDU 23,227,60,116 :81\$=CHR\$ (228) ,255,170,128,170,255 :82\$=CHR\$ (229) ,60,23,228,0,13,63 :83##CHR# (230) ,235,235,63,13,0,23 :B4\$=CH8\$ (231) ,229;0,178,252,215 :05\$=CHR\$ (232) ,215,252,176,0,23 ,230,27,255,175,253 ,223,178,255,233,23

,231,171,255,108,253 ,223,117,255,219,23 ,232;0,129,219,255 ,255,219,129,0 140 VX=V8X. +63\$+" ["+61\$

CLEAR まり切えまりない MODE 5 1 VDU 23;8202; 0; 0:0

: PROCINIT

150 PROCECREEN : REPEAT

-: PROSSPLATCHECK

160 PROCMOVEYOU

170 PROCSPLATCHECK

180 PROCHOVESPACRAFT(ROX) : RO%=RO%+1

: IF ROX=10 ROX=0

190 IF (ST DIV 1009) 3NT

THEN LX=LX+1 : NZ=NZ+F

200 UNTIL AMOHOMEZ=4

210 DZ=DZ+1 : GY=D1+1 : IF DI(9

THEN 140

220 PROCHELLDONE

240 A\$(0)=A1\$+A1\$+A1\$+A2\$+A_ 4\$+A4\$+A4\$+" 3 "+A1\$+A5

\$+" 4 "+A5\$+5; "+A5\$+

:A\$(1)=" 3 "+A:\$+" 6 ** "+#1#+" "+#1#+" · •

*+A4\$+A4\$+A4\$+A4\$+A4\$

250 A\$ (2) = A4\$+A4\$+A4\$+A4\$+A 48+A48+A48+A48+912 "+A58

+A5\$+A5\$+"2"+A2\$+A4\$+A 45+445+445 : A\$(3)=A4\$+A3\$+" 2"+A1\$

+A5\$+" 3 "+A1\$+A1\$+ *+444+444+444

250 A\$ (4) = B4\$+B4\$+B3\$+B4\$+B 3\$+83\$+85\$+" "+81\$+83\$

+B4\$+B3\$+B5\$+" "+B1\$

:A\$(5)=B4\$+B3\$+B3\$+B4\$+ 844+834+844+844+834+844 +83\$+83\$+82\$+* "+85\$+

824+" "+855

270 A\$ (6) =B1\$+B4\$+B3\$+B5\$+ " "+B1\$+B5\$+" "+B1\$ +B44+B34+B44+B44+B34+B5

:A\$ (7)=! "+85\$+84\$+ B3\$+B2\$+." "+85\$+B3\$

+83\$+B4\$+B3\$+B2\$

280 A\$ (B)=" "+B1\$+B3\$+B4 \$+83\$+B3\$+B5\$+* "+8[\$+B3\$+84\$+34\$+B5\$

:A\$(9)=" "+B5\$+B2\$+ **B5\$+B3\$+B2\$+

"+B5\$+B2\$+" "

290 XX=10 : YX=27

OLIFEX=3

*AMONOMEX=0

: R0%=0 : BIM, AMD2 (3)

: ENSPROC 300 DEF PROCECREEN

: VDG 20 :PRINT TAB (0,0);

: COLOUR 435

*: PRINT STRING\$ (40

1 1 :FOR AX=OTO 15STEP 5

:PRINT TAB(A%,2)" "; TAB(A1,3); " : TAB(A1+4

,2);" "; TAB(AX+4,3);

: NEXT

: PRINT TABLO (17): STR[NS#(20." ")

:PRINT TAB(0,27); STRENG\$ (40, " ");

360 PRIM7 " "; TAB(6,5); :COLOUR :29

:FOR A%=910 4STEP -1 : COLOUR AX (AX)

(PRINT As(AZ)

: NEXT : COLDUR 7

PRINT :FOR AX=3TO OSTEP -1

: COLOUR AT (AT) :PRINT A\$(AZ) : NEXT

320 PRINT TAB!1;291; "SCORE: ":SX;" LIVES=":LX

330 A\$#STRING\$(0%, CHR\$ (224 1)

> : COLOUR, RND (2) :PRINT TAB(0,17);A\$;

TAB(2G-LEN (A\$1,17); A\$: ENDPRGC 340 ***************

350 DEF PROCMOVEYOU : PROCDELETÉ : 1F INKEY (-1) THEN YZ=YZ+2"

+5%=S%-10

: SOUND 1: VOX: 25.2 ELSE IF THKEY 1-21 THEN YX=YX-2

:SX=SX+10

:SQUND 1, VO2, 75, 2 500 DEF PROCSPLATCHECK : 400 19,82,8-87,0 CHR\$ (226) + CHR\$ (226) + 360 FOR A=0TO (10-9%)+4 : IF YX=27 .0.0 CHR\$ (226) + CHR\$ (226) + THEN ENDPROC. :NEXT CHR\$ (226) *CHR\$ (226) + CHEXT 510 IF YX=17 AND XX)0X-1 370 IF INKEY (-1) OR FOR 8%=018 20 INKEY (-2) AND XX(20-0X :NEXT :FOR AX=140TO 80 THEN ENDPROC STEP -2 THEN. 390 : FOR CX#1TD: 7 : PRINT TABLAZMOS 20 520 IF Y%>17 : VDU 19.C%,C%,0,0 380 (F INKEY (-102) ,0 ,AZDIV 201:8\$ THEM: #X=(27-YX)/2: THEN IN-XX+1 ELSE MX=1(27-YX1-2)/2 +SOUND 1, VOX, 100, 2 :SOUND 1, VOT, 100, 1 : NEXT : SOTO 550 660 FOR A=0TO 250 : NEXT :SOUND 1, VOX, 69, 1 530 IF MIB# (A# (MX-1) , XX+1 : NEXT *XX=10. ELSE IF INKEY (-B&) ,1)() F W : YX=27 : NEXT THEN XX=XX-1 THEN 570 :PROCSCREEN :FOR AX=OTO 12 :SOUND 1, VG%, 50, 1 2 540 ENDPROC :A\$=STRING\$/AX. " ")+ : ENDPROC (SOUND 1, VOX, 100, 1 "BAD LUCK" 550 (F MISS/As(NX-1), XX+1 620 VOU 23,254,0,28,28 390 IF XX) [9 PRENT AN ,1)=4 * AND NIDS (A\$ (NX-,8,127,8,20,34,23 THEN XX=19 :8%=RND(100):+100. 17, XX+1-XSX)+1,1)= ELSE IF MACE ,253,0,0,28,28,8,127 :500ND 1, VBX 8X 2 ,8,20,23,252,0.0.0 THEN XX=1 : SOUND 2, VOX, 82+1 400 IF YX)27 THEN 570 ,28,28,8,127,8,23 .2 540 ENDRAGO JHEN YX=27 ,251,0,0,0,0,26,28 :50UND 3, VOX, 81+2 570 PROEDEAD :S%=S%+10 ,8,127,23,250,0,0 12 ELSE IF YELL :6070 160 ,0,0,0,29,28,8,23 :FOR BX=070 100 580 DEF PROCDEAD THEN PROCHOME ,249,0,0,0,0,0,0,28 : NEXT 410 GDTO 440 : LX=LX-1 ,28,23,248,0,0,0,0 : NEXT 420 IF VOX=-12 : IF 12=0 ,0,0,0,28 :FRINT "You are dead!!" THEN PROCEND THEN RESTORE 430 : IF YX (4 """You were on level 590 IF YX(4 OF YX)18 :FOR AX=OTS 11 THEN YX=YX+1: ": CX: "when you got. IREAD PT, DUT THEM 620 630 FOR AX=255 TO 245 killed" ELSE VOU 23, 252, 17 : SOUND 1, 6, 6, 1 STEP -1 870 IF SXXHX ,18,212,248,212,18 :SOUND 1,-15,71,101 :PRINT TAB(XX, YX): THEN HX=SX ,17;0 SMEXT CHRS (AZ) 680 PRINT " "Your SCORE ELSE FOR A=010 2000 : 400 23, 253, 65, 34 :COLOUR RND (7+6) Nas ":57 ,20,8,127,9,28,28 :FOR A=010 100 (PRINT "HISCORE is :NEXT 430 DATA 119.5.110.5.80 :VBU 23,254,136,72 " 相影 ,43,31,43,72,136,0 10,100,5,100,5.70 : PRINT TABIXX, YX); : #FX15 16 B :PX=100 .10,55.5,40.5.25.5 590 PRINT "Another Same ,10,5,150.10 500 REPEAT : 17 = 10 Y/N" :FOR AX=25210 255 : YX=27 : G\$=GE7\$ 450 IF YXX4 :SOUND 0, VOX, 4, 20 : COLOUR RND (3) +1 : IF Gs="Y" THEN YZ=27 PRINT TAB(XX,YX); :FOR AX=070 10 THEN 40 #: XX=10 CHR\$ (AX) :FOR B%=1TO 7 ELSE IF 6#="N" 460 COLOUR 11 :FOR BX=OTO PX/4 : VOU 19,8%, RND (7) THEN SHO PRINT TABLET, YE . : VDU 19, (BX+11MOD 6+1 .0.0.0 ELSE SOUND 1, VOX, 64 CHR# (255) ,RND(7),0,0,0 (NEXT) ,5 scolour 7 : FOR 61=070 10 :FOR B1=010 10 : GOTO 690 : NEXT :PRINT TABLES : "SE DRE * NEXT 700 DATA 3,1,2,3,1,2,3 : VBU 17, (BX+1) HOD 6+1 :FOR BX=FTO 7 :":SY:" LEVES=":Lt .1.2.3 470 ENDPROC . (BZ+11MOD 6+1.0.0 : VOU 17,8%,8%,0,0 710 DEF PROCWELLDONE 480 BEF PROCHOVESPACRAFT(AL .0 .0 : CLS **計解記**[] : NEXT . : VOU 23, 252, 7, 7, 7, 7 : IF AX MOD 2 =0 455411= :SOUND 1, VOX, PX # 2+25; 640 PROCECREEN ,1,63,63,55,55,23 RESHTS (ASTAC) 193+ ,5 ENDEROC ,253,224,224,224,128 194=P4-2.5 LEFT\$ (A\$ (A\$), E) 650 DEF PROCENT ,252,252,236,236,23 ELSE AS (AZ) = RIGHTS (AS (A #經計 :CLS ,254,7,7,7,7,6,6,14 X] , 1) + LEFT\$ (A\$ (AX) :UNTIL PX(-20 : A\$=STRING\$ (80. ,14,23,255,224,224 :35115 (9) CHR# (255)) , 224, 224, 96, 96, 112 610 SOUND 0, VOX, 4, 30 490 PROCSPA(AX) :PRINT '''A\$,112 :FOR 4%=010 40 1PROCHOVEY ONSPA : B\$=CHR\$ (225)+ #FOR 9%=110 7

CHR\$ (226) + CHR\$ (226) +

ENDPROC

Space Hike listing

From Page 55

720 PRINT TAB(9.5): CHR# (252) (CHR# (253): TAB(9,6); CHR\$ (254); CHR# (255); TAB(8,3); "YOU!" :FOR A=010 4000 : NEXT :PRINT TAB(8,3); 1 730 A#=CHR# (225) +CMR# (226) + CHR\$ (226) + CHR\$ - (226) +CHR\$ (226)+CHR\$ (226)+ CHR# (226)+CHR# (226)+ CHR\$ (226)+" " :8\$=" "+CHR# (226)+ CHR\$ (226) + CHR\$ (226) + EHR\$- (226)+CHR\$ (226)+ CHR\$ (226)+CHR\$ (224)+ CHR\$ (226)+CHR\$ (227) :FOR AX=160TO 131 STEP -1 740 PRINT TABIARMOD 20 #AZDIV 201; A\$:SOUND 1,-13,101,2 :FOR A=010 250 : NEXT

: FOR AX=0TO 300

TAB(11,5);" '

:PRINT TAB(11,51;"!";

: NEXT. :FOR A%-070 30 :PRINT TAB (41,6); CHR\$ (227): :FOR A=OTO 100% HEXT : VOU 8:225 :FOR A=0T0 100 : NEXT : NEXT :FOR AX=131TO 300: 750 PRINT TAB (AZMOD 20 AZDIV 20);85 : SOUND 1,-13,255,1 :FOR A=010 100 : NEXT : NEXT 760 PRINT "" CONGRATULATI DNS!"" YOU HAVE BEATEN" " BBC MICRO!!" :FGR 4%=070 10000 : NEXT : ENDPROC

770 DEF PROCHUME

TAB(1,2);

780 IF XX>0 AND XX<4

AND AMOXIONED PRINT

: VDU 255, 255, 256, 8

,8,8,10,255,255,255

: AMONGMEX=AMONDMEX+1

PRINT TAB(16,2); :AMUX(3)=-1 :60TD 420 820 PROCDEAD : ENDPROC 830 DEF PROCEELETE : AZ=7 840 IF YX=27 OR YX=17

: ANOI (0) =-) COLOUR 135 :GOTO 420 ELSE COLOUR 128 790 IF XX>5 AND XX<9" 850 IF YX>15 AND AMOXILLEO PRINT THEN SE=" " TAB (6, 21; ELSE AX=10-((YX-1)/2-1) : VDU 255, 255, 255,8 :Ss=MIDs(As(AX),XX+1 ,1) ,8,8,10,255,255,255 : ANOHONEX=AMOHOMEX+1 860 COLOUR AT (AT) : AMDX (1)=-1 :PRINT TAB(XX,YX):Ss :60TO 420 : COLOUR: 129 800 IF XX >10 AND XX<14 : COLCUR 7 AND AMUX (2) =0 : ENDPROC PRINT TAB(11,2); BTG DEF PROCSPA(AX) : VOU 255, 255, 255, a : IF AXK4 ,8,8,10,255,255,255 THEN 22=6-(A2#2)+19 : ANDHOMEX=ANDMONEX+(ELSE 2%=20-(AX+2)+3 : AMOX (2) =-1 880 COLDUR AT (AZ) : GOTO 420 :PRINT TAB(0, ZZ); As(AZ) 810 IF XX>15 AND XX<19 : ENDPROC AND AMOX(3) =0 890 DEF PROCHOVEYONSPA 900 IF AZ MOD 2=0 : VDU 255,255,255,8 THEN XSX=-1 ,8,8,10,255,255,255 ELSE ISX=1 : AMOHONEX=ANOHOMEX+1 910 IF YX=IX AND YX<17 THEN XX=XX+XSX 920 ENDPROC

Get your message taped

DID you know that there's a simple way to use your Electron as a kind of typewriter? Instead of writing on paper you write. your message into the Electron's memory and save it onto a cassette tape.

You can then send the tape to someone with an Electron or a BBC Micro and they can load the message into their micro and read it.

It's remarkably simple. All you do is to type in the message you want from the keyboard just as though you were typing in a program.

You enter the line number as normal and then start typing the message. When you've written enough on one line, press Return, then enter a new

line number and start typing again.

It's simple and it's easy, and it allows you to use the micro as a very, very elementary word processor.

Of course, all the usual program editing facilities still apply. If you don't like line 30 you can get rid of it all by typing in 30 and pressing Return to get rid of the lot.

Or you could use the cursor and Copy keys to alter the old version. You can edit it just as though it were a normal program.

But you can't RUN it you get an error message. That, though, is no problem, as we don't want to run what we've written. We just want to save it on tape so we can send it to

someone.

This we do in the normal way, just using a file name like:

SAVE "MESSAGE"

To the micro it's just another program so it saves it to tape like any other program. You can then send it to whoever you want. They LOAD it just like a normal program and read the message, ignoring the line numbers.

As I said before, it's very simple and very useful as people who have word processors on their BBC Micros will be able to load your program, get rid of the line numbers and print it out on a printer.

Of course, these same facilities will come to the Electron eventually,

So, if you want to send

messages, send them as a program! And if you want to send an article to Electron User but don't have a typewriter, then send us the message disguised as a program.

This listing is included in

this month's cassette

tape offer. See order

form on Page 43

We'll do the rest.

10 This is an example of how to 30 write using your Electron as 50 a typewriter. ['we only left 70 the spaces in between the lines. 90 for clarity. Also the lines can 100 110 be a lot longer, up to 255 120 130 characters, Using this method 140 150 you can send legible messages 180

170 on cassette tape,

From Page 35 170 VOU 4 :PRENT TABLO, 61 + VOU 5 180 ENDPROC 190 REM **** Crash **** 200 DEF PROCEs ash 210 VOU 5,19,3,11;0; 220 FDR J%=100TB 500STER 2 230 SCOL 3, RND (3) 6 AMOVE RND (3%) - STDEW E , RND (JY) -JYBEY 2 : 408 249 :50UND 15,-15.RMD(31+3, 249 NEXT 250 TIME =0 IREPEAT SWITTE TEME 3250 280 GX=GX-1 > 4F%=-1 270 ENDPROS 280 REM #### Hot #### 290 DEF PROCHEL 300 (F A89 (\$2*12.-16 43 OR ARS (Visit -14 232 THEN PROFEST :ENDPROC 310 XX41X1=-15 +72(TZ)=48 · : PROCPLOE * AX (10) = 50 PC 10%≠配易金器 320 IF TERESTEE THEN 英語中語型中語中 330 IF TE(134=1 THEM AT - ST- ST 340 IF T20223=8 THEN PROCESSES 350 VBU 4 :PRINT TAS: 11.1:90 :400 5 360 ENDFROC 370 REM WWW Institut work 380 SEF PROCEsitial 390 DIM (X2(3), Y1(3), DXC(5) , DYT45) (TIVS) 400 VBU 23,240,84,32.128 ,208,180,708,84,98,73 ,249,32,112,188,80,80 ,168,0,80,23,250,45 ,65,34,62,127,127,73

,28

410 VOU -23,241,0,0,64,76

420 VDU 23,243,16,16,24

,95,32,48,48,23,242

0,0,2,8,8,4,12,12

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

,24,152,156,156,158 ,23,244,8,8,24,24,25 ,57,57,121 430 VDU 23, 245, 191, 191, 255 ,255,255,255,255,255 ,23,246,253,253,255 , 255, 255, 255, 255, 255 440 VBU 23,247,195,195,135 ,135,7,15,14,14,23,248 ,195,195,225,225,224 ,240,112,112. 450 ENVELOPE 1,2,1,1,-1 10,20,18,125,0,0,-126 , \$26, 126 450 ENDERSO 470 REM #### Instruct #### \$80 DEF PROCINSTruct 490 PRINT TABLIC, OF ASTERBLD PROSPECTOR* TAB(10.1) property and a section of the section of the section of : 48 19,5 500 PRINT TAB(3,2)"Your task is to collect a valuable mineral found in aster oids. Red ones contain small quantities of the mineral (10 points) but green ones contain much sore. (50 points)" : *FX10.5. 510 PRINT " Your task is dangerous! Your ship canbe mortally damaged if asteroids collidewith the ship's side. The really bad ones are the mines! These have been set to protect the asteroid swarm from rival"; 320 PRINT *prospectors. Showl d you collect one of

these, you will have

only a few seconds to

combination displayed

at the top left of the

letter

640 REM **** Play ****

650 DEF PROCPLay

defuse it by typing

in the three

screen. If you mistype it" 530 PRENT for are too slow then you blow up!" TAB((5,19) "CONTROLS" FAB(15, 20) FAB(6,21) ">Rotate ship to right <Rotate ship to left IThrust" 540 PRINT TAB(10,24) PRESS SPACE TO START"; REPEAT UNTIL SET =32 550 ENDPROC SAO REN. **** Mayeast **** STO DEF PROCMoveast 580 C%=TX (1%) ANS 3 PROCPlot 590 XX(EX)=XXYIX)+DXX(IX) SYX(IX)=YX(IX)+DYX(IX) : IF RX=0 THEN K=1 :L=0 ELSE K=0.997838923 :L=6.54031292E-2 118 RY#-1 THEN La-L 600 PROGRatate : IF 5%=1 BR-(XI)XY=(XI)XY MBR7 610 IF ABS (XX(IX)+16)(80 AND ABS (\$%(1%)-12)<76 THEN PROCHIT ELSE PROCELOT 620 IF ABS (XX(IX)) >1000 OR ABS (YZ(EX)) > 1000 THEN XX (1%) =80% (XX (1%)) + :Y%(1%)=-86N {Y%(1%)}*700 :DXX(IX)=RND(651-33 : DYX (17) = RMS (45) -33 : 1%((%) = RHD(3) : 1F TX(1X)=3 THEN TY(EY)=6 630 ENDPROC

660 ₹%=0 : REPEAT : 8%= INKEY (-104)-INKEY (-103) : SX=-INKEY (-98) : VBU 5 :MOVE -15,48 :SEBL 0.0 : VDU 240 :PROCRocket : IF SX=10R RX()0 THEN SOUND 16,-15,6 ,20 570 FOR 1%=110 5 680 PROCHoveast APO MEXTO 700 PROCRocket 710 UNTIL FX : IF 6%()0 THEN FX=G 720 ENDPROC 730 REM **** Plot **** 740 DEF PROCPlat 750 IF ABS (XX(IX)+16))624 OR ABS (YZIIZ)+16) 7482 THEN ENDPROC 760 NOVE XXIIXI, YXIIXI : GCOL 3,C% : VIU 240 770 ENDPROC 780 REM **** Rocket **** 790 DEF PROCROCKET 800 GCOL 3.1 : IF R%=1 THEN HOVE 40,-48 : VDU- 249 310 IF RX=-1 THEN MOVE -80,-48 : VDU 249. 820 IF SX=1 -THEN HOVE -40,-64 : VDE 249 : MOVE 0 . - 64 : VOU 249 830 ENSPROC 840 REM **** Rotate **** 850 DEF PROCRetate SSO XX([X)=!NF (XX(EX)*K+YX(I 2) +8+.5) a YX ((X) = {YX (IX) +K-XX (IX) + 14.51 870 DXX1121=INY (DXX41X)*K+DY %(1%) +L+.5) +DYX(IZ)=INT (DYX(IZ)*K-D XX((X)*L+.5) 880 ENDEROC

Asteroids listing

From Page 57

890 REM **** Setup **** 900 DEF PROCSetup 910 VDU 5,29;840;498; 920 GOGL 0.3 : MGVE. -54,64 : VDU 5,241,242,8,8,10 ,243,244,8,8,10,245 ,245,8,8,10,247,248 930 FOR INSLITE 5 :XX(IX)=700*SBN (

RND424-1.5) :YX (3X1=700*55N (

> RND(2)-1.5% (DXX)IX)=BND(DX)-0X

014 2

*DYX(IX)=RND(DX1-DX bty 2

: TW (17) = RND (2)

TREXT

940 VDG 19,2,2;0;19,3,6;0;

950 COLCUR 2

:PRINT TAB(5,0) "SCORE



": TAB(16,0); : COLOUR 3

:FOR [=1TO 6%

: VOU -250" : NEXT

: COLDUR O

: VDU 8,250,250

TOOLOUR 1

PRINT TAB(EL,O): AT

960 ENDPROC

This listing is included in this month's cassette tape offer. See order form on Page 43,

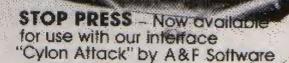
ELECTROP

...this is the add-on you have been waiting for.

A switched joystick interface for the Electron user.

Only £24.95 incl. VAT

- Compatible with all "Atari-style" 9-pin joysticks
- Plug in cartridge design
- Tough plastic casing
- Does not interfere with keyboard operation
- Available from your dealer or direct by mail order
- 12 month guarantee
- Games coming soon from most software houses
- Extends the versatility of your Electron computer



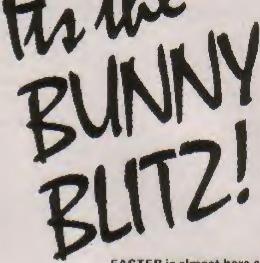


First Byte, Dept. EU. 10, Castlefleids, Main Centre, Derby, DE) 2PE Tel: Derby (O332) 365280

A Genuine First Byfe Add-on

181.

Don't be fooled - this fast and furious game by MARK SMIDDY is trickier than it looks . . .



EASTER is almost here and with it the Electron User Bunny Blitz. It's a simple little game to learn, but one that's fiendish to play.

You have to dash around collecting Easter eggs that are scattered about the screen. The trouble is that once you start going you can't stop.

You gain points for every egg you collect but whenever you bump into a bunny points are lopped off your total.

Not only that, but you are fighting against the clock.

Clear a screen in time and you are faced with another screen containing even more bunnies. Such is life in the world of the microchip.

> Full listing on Page 60

PROC_init (Lines 510-700)

PROC_screen (Lines 710-850) PROC_prize (Lines 860-940)

PROC_get_skill Displays title header and control keys. Gets (Lines 320-420) the skill level from the player. . Reads the keyboard. Adjusts the player's

(Lines 200-310) X, Y vectors. Decides which way the player is facing. Replots the player.

Sets up the user defined characters. Sets up the envelopes. Sets up the Initial colour scheme.

Draws each screen full of bunnies and prints the word Score. Draws all the eggs.

VARIABLES

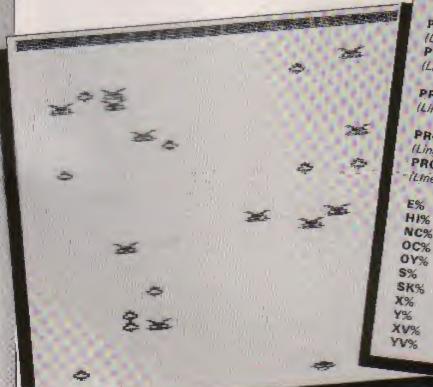
Number of eggs on screen.

New character type of player. Last X co-ordinate of player. Last Y co-ordinate of player. Present score.

Present skill level.

Present X co-ordinate of player. Present Y co-ordinate of player. Present X vector of player.

Present Y vector of player.



Bunny Blitz listing

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

From Page 59

- : REM BUNNY BLITZ
- 2 REM MARK SMIDDY
- 3 REM (C) ELECTRON USER
- 10 REPEAT
- 20 NODE 1
- 30 PROC getskill
- 40: MODE 2
- 50 VDU 23,0,8202;0;0;0;0;
- 60 PROC init
- -70 TIME #0
- 80 REPEAT
- 90 REPEAT
- 100 VDU 4 PRINT TAP(6,0); \$%
- : 400 5
- 110 XX=XX+XVX
- \$ XX=XX+XXX
- 120 PROC player
- 130 IF POINT(8%+15, 7%-12)=5 SOUND \$11,1,100,3
 - ANGVE XX. YX-4
 - : GCOL 3.1

 - : VDU 5,229
 - 15%=3%+40
 - : EX=EX-1
- 140 IF POINT(XX+16, YX-12)=6 SOUND 410,1,2,2
 - : 5%=5%-5
- 150 UNTIL TIME >=6000
 - OR EX=0.
- 151 IF EX=0 CLS
 - :PROC screen
 - 17the =0
 - :1F SKX>7 SKX=5XX-5
- 150 UNTIL TIME)=6000
- 170 MBDE 1
- 180 PROC result
- 190 UNTIL O
- 200 DEF PROC player
- 210 VOU 5
 - :GCOL 3, 4
- 220 IF INKEY (+66) YVX=32
 - : 1177=0
 - :NCZ=3
- 230 IF INKEY (-98) YVX=-32
 - : 39%=0
 - : NCZ=2
- 240 IF INKEY (-103) XVX=-64
 - :YVX=0

- A: NCX=0
- 250 IF INKEY (-104) XVX=64
 - : 777.=0
 - : NC7=1
- 250 IF XXX=1216 XX=1216
 - ELSE IF XXC=0 XX=0
- 270 IF YX>=992 YX=992
 - ELSE IF YXX32 YX=32
- 280 MOVE OXX. GYX
 - : VOU 224+0C%
- 290 MOVE XX, YX : VBU -224+NCX
- 300 0X%=XX
 - : DYX x YY.
 - :OCX=NCX
- 340 ENSPROC
- 320 DEF PROC getskill
- 330 PRINT TAB(9,1) "Welcome
 - te Bugay Blitz"
- 340 PRINT TABILA, 41 "A
- = Up":TAB(14.6) "[
 - = Down"
- 350 PRINT TAB(14.8)%
 - = left"; TAB(14,10)
 - ") = Right'
- 360 REPEAT
- 345 PRINT TAB(0,20) 72
 - is the hardest level.
 - 40's the easiest"
- 370 INPUT TAB(0,16) Choose
- your concentration
 - BDC 1 12/401 "SKX
- 380 UNTIL SKX)=2 AND SKX(#40
- 390 PRINT TAB(0.16):
 - STRING\$ (40, " 1)

 - TAB(0.16) "Fress the
 - SPACE BAR to play
- 400 KFX15.1
- 410 REPEAT UNTIL 32=GET
- #20 ENDPROC
- 430 DEF PROC result
- 440 VDU 4
- : COLOUR 2
- :COLOUR 128
- 450 IF HIX)=S% HIX=S%
- 455 PRINT TAB(10.1) "SURRY
 - out of time!!!"
- 460 PRINT TAB(10,3) "Bunny
 - Blitz Results"
- 470 PRINT "Final score
 - ";SI "High Score

- ";HIX 480 *FX15.1
- 490 PRINT TAB(0,30); "Press
 - SPACE for a new came" REPEAT UNTIL 32=SET
- 500 ENDPROC
- 510 CEF PROC init
- 520 XVX=0~
 - 1,462,00
- 530 XX=640
- 文学文学544
- 540 CXX=640
- \$BVX=544
- 550 NCX=0
- :00%=0 540 SX=0

 - SHIVED
 - :EX=0
- 570 VBU 23,224,0,24,126
- ,183,126,110,60,24
- 580 VDU 23,225,0,24,126
 - ,237,126,118,60,24
- 590 VDU 23,226,0,24,126
 - 126,219,126,36,24
- 800 VDU 23,227,0,24,90
 - 255, 126, 102, 60, 24
- 610 VDU 23,228,195,102
 - ,60,60,126,90,255
 - 128
- 620 VOU 23, 229, 16, 56, 56 , 103, 66, 124, 56, 15
- 530 VDU 17,0,4;0;
- 540 VDU 19,1,3;0;
- 650 VOU 19,2,2;0;
- 660 VDU 19,3,0;0;
- 661 VDU 19.4.7:0:
- 670 ENVELOPE 1.1.8.-B
 - 8,4,4,4,126,0,0,-126 , 126, 126
- 680 ENVELOPE 2,1,20,-20
 - ,20,45,45,45,126,0 , 9, -126, 126, 126

- 690 PROE screen
- 700 ENDPROC
- 710 DEF PROS screen
- 720 VBU 4
 - + COLOUR 7
- : COLOUR :31 730 PRINT TABLO, 01 STRING # (2)
- 1
- 740 PRINT TAB(0,0) Score: " 750 CQL QUR : 2:
 - : COLOUR: 128:
- 760 LOCAL XX, YX
- 770 FOR XX=010 18
- 780 FOR YX=1 TO 30
- 790 PRINT TAB(XX, YZ);
- 800 IF RNB(SKX)=1-VD8 228
- 810 NEXT
 - : NEXT
- 820 PRGC prize
- 830 COLOUR 131
- 840 VDU 5
 - : MOVE OXX. OYX
 - Mary.
 - : GCOL 3.4 : VDU 224
 - : VDU 4
- 850 ENDPROC
- 860 DEF PROC prize
- 870 COLDUR I 880 LOCAL XX.YX
- 890 FOR XX=010 LS
- 960 FOR YX=1 TO 30
- 910 PRINT TABIXX, YX); 920 IE RN045K%) = 1 VDU 229
- :E%=E%+1 930 NEXT
 - : MEXT
- 940 ENDPROC
- This listing is included in this month's cassette tape offer. See order

form on Page 43.

Micro Messages

SOME of the programs ! have for my Electron are on the noisy side, to say the least! But I find that sometimes I prefer the sound to be quieter or not on at all.

Is there any way I can do this without adjusting the program listing?

Gary Cunningham, Stockport.

· You can switch off the Electron's sound channels by typing in *FX 210.1 before you run the program. To get the sound back again you use *FX 210.0

Spacings problem

MY family enjoy orping in the programs in "Flectron User" bes you will have to do something about your fistinos!

The biggest problem is with program fres which contain spaces which are broken over more than one line.

It is impossible to know how many spaces to key in

Wouldn't it be passible for you to acd a character into your listing, like an underline instead of a space, so that we could count them?

The listing for "Parky" in the March issue was a nightware to sort out. - A.L. Beaumont, Clacken.

· Point taken Wr Beaumont Well are to be more careful in future.

A satisfied customer

I THOUGHT I would take this opportunity to congratulate you on the very clear format of your listings. This is unlike the very obscure orin-

*FX 210,1 for the sound of silence...

ting in many other magazines.

Carry on the good - E.W.W. work. Theobald, Kings Langley, Herts.

 Thanks for your letter. It's nice to hear ! as the following shows: from a satisfied customer. We try to make the listings as clear as possible, though when you make a mistake typing in a program (as we all dol it's much easier to blame the listing than ourselves!

Telling O from 0

HAVING just bought an Electron we have found your magazine a real help - "Listings Loopholes" (February issue) was especially good.

We have also enjoyed your program listings but just one plea. Please efferentiate between 0 and O! - D. Blackburn, Sheffield.

 We know trying to tell the difference between O and D can be quite frustrating at first. Sadly we are limited to the characters on our printer, which does not

DO you like us or

do vou hate us?

Are our games too

hard or too easy?

And what about

Micro Messages

and tell us. We can

these are the pages

that you write

Write to us at

Remember, that

the articles?

differentiate them.

However, in a short while it will become second nature to you and your problems will ease. After all O and O are reasonably different

Review reviewed

THANK you for reviewing "Start Programming with the Electron" in the December issue of Electron User.

Your concern about the early introduction of procedures and recursion is understandable but we have not just done that by accident.

This was as the result of research by an exmasters student of Exeter University, with a variety of novice programmers, which showed us the reason pupils have major problems with procedures and recursion is because they are usually introduced as an afterthought in most computing courses.

yourselves. So tear vourself away from your Electron keyboard and drop

The address is: Micro Messages Electron User Europa House 68 Chester Road Hazel Grove Stockport SK7 5NY.

For example, we discovered that pupils who were introduced to recursion before they saw iteration had less problems conceptualising what recursion was than the ones who learned it after they had been introduced to iteration constructs such as FOR loops.

The mention that we go on to introduce functions in chapter two betrays the fact that your reviewer has not in fact read the book.

Functions are introduced in chapter four, a good distance away from procedures, as we also discovered that when procedures and functions are introduced together, pupils develop a habit of mixing them up with each other.

The two constructs have similar syntax but radically different semantics.

Your mention that the explanation of expression has been inadequate was of great help to us as it confirmed the same evidence we had received from our field trials.

We are currently revising the Start Programming with the Electron book in order to lurn it into a book for the BBC Micro and would be grateful for further comments and suggestions for improvements from you and other people who have read the book. - Masoud Yazdani, University of Exeter.

· I can assure Mr

Yazdani that I have in . fact read the book. though I think he knows that already, or why should he say that I'd been "of a great help" with my comments!

If he reads the sentence about procedures and expressions again, he'll see that the point I was trying to make was that procedures, functions and conditional branching (which is in chapter two) come before INPUT command is treated.

He does not answer this point in the letter nor any of the other points raised in the

Having said that I must say that I find his research findings most interesting and applaud his efforts to help novice programmers.

Peter Green

Positron poser

HELP! With reference to the Positron Invaders listing (Electron User, February) my Electron tells me there is no such FN/PROC at line 470.

Can you help please? - Ann Cross, Oxford.

 Thanks for telling us the error message. You'd be surprised how many times people write in with problems and don't tell us what the Electron is doing!

The Electron is telling you that you've tried to use a function but it

Micro Messages

From Page 61

can't find that function.

We suspect your trouble stems from line 1370 where the function being called in line 470 is defined.

If line 470 has been typed in correctly, then it tells the Electron to use the function found in line 1370.

If you've made an error in this line, it will only be noticed when the Electron processes line 470, hence the slightly misleading error message.

So check line 1370 and you should soon be less frustrated.

Positron alternative

AT my son's request, I changed the control keys for the game Positron Invader and thought your readers may like to have the alternative keys.

All you do is change lines 820, 830 and 860, as follows:

820 IF A=82C AND XL>1 THEN XL=XL-1 830 IF A=82E AND XL(16 THEN XL=XL+1 BAO IF A=82C THEN PROCFIRE

This results in the < key moving the base left, the > key moving it right and the space bar

firing the laser.

Also at my son's request, I modified line 280 to read:

280 PRINTTAB(0,14);

which has the effect of drawing a clear landing line on the screen.

Thanks for a thoroughly good magazine, Keep up the good work, — A.M. Dove, Dumbartonshire.

Problems of saving

AS an Electron owner, I was wondering whether you can give me any advice on how to save programs.

I have had some difficulty in loading from tapes, but with varying the volume on the tape recorder loading has become easier. I am, however, still getting trouble with saving.

It becomes very frustrating having typed in the program then being unsuccessful in saving

Can you give me some ideas as to how I can overcome this difficulty. – G. Dean, Appledore, North Devon.

 It's always easier to load than to save. We always test that our micro will actually save a short program successfully before we type in long ones.

This saves a lot of anguish.

It could be that you still haven't got the volume and tone controls correct or possibly the recording heads need cleaning.

Sadly, it could just be that your cassette recorder is incompatible with the Electron.

We hope to carry an article on saving and loading programs in a future issue of Electron User.

The right direction

I HAVE owned a BBC Micro for two months now. I have bought The Micro User every month for ages, even before I purchased my micro — It's a fine magazine but tends to be just a little advanced for the newcomer.

I always enjoyed Electron User when it was inside The Micro User as it was written in a way which made it easy to understand.

I just bought the first full issue of Electron User and it is very good,

I find most magazines on computers are written for almost expert computer people. They tend to be over technical.

Yours, which is I feel written for the younger micro user, is a step in the right direction.

I think most kids, understand micros better and quicker than us old folks. Articles for us should be very simple and straightforward.

Keep the complicated stuff for the kids who after all get taught it in school.

I will probably continue to purchase Electron User as I almost understand it. The Micro User can do without me for a few years till I know what I am doing.

Keep up the good work. How about an adult version of The Micro User (written in the same way as Electron User) for us? – N. McPherson, Harrow.

• Many thanks for your letter. It's nice to know that we're so much better than The Micro User! I wonder if all our readers agree with the way we present the magazine.

Please talk to us - we're not snooty!

I HAVE only had my BBC B Micro since Christmas and so far I have only used the short programs.

Did anyone realise when the Tapestry program in the February issue of Electron User is run on the BBC Micro, if any letter key is pressed for a few seconds, instead of the space bar, the pattern will change automatically 12 times and then stop.

I think your magazine is great for a beginner like me so please tell Pete Bibby that all BBC owners are not "snooty" and that I hope he will

still talk to us. -Michael Smith, Aldershot.

Sorry Michael, Pete wasn't really serious when he wrote that. And he says he will talk to BBC Micro owners - he has to because he shares an office with two of them!











ACORN **ELECTRON**









The centibug descends from the top of the screen weaving Intimidatingly between the mushrooms. Your objective is to shoot all the segments of the centibug before it reaches the oction of the screen.

Featurns Include: spiders, shalls, files, & skill evels. hi-score, rankings, and indeasing

score, increasing difficulty.

A novel and unusual program. Areade-action with this exciting multi-stage shooting game. The objective of the game is to shoot the disens out of their boxes' before the 'boxes' fill up. Once full, the cliens fly down relevitiessly, exploding as they hit the ground. The game features include: a skill levels, rankings, his

48 morthling invaders drop bombs that slowly erade your defences, and two types of spoceship (normal and double speed) fly over releasing large baptis that penatrate through your defendes, Indicasing difficulty, hi-score, rankings, superburaphics and sound.



This program covers 166 countries which are divided into 8 categories of difficulty, Each country is pincolined on an occurate hi-resolution screen map of the world, and the user screen the applital and/or population, fit the end of the tast, the percentage of correct answers is given, so that the student can easily monitor by marcasing geographical



holt. implementation on the merket. This program has it all ... HOLD. NUDGE, GAMBLE, spinning reels, realistic faults and sound effects, multiple winning lines. This is THE fruit mortiline program to buy.



This fascinating program enables the user to "View the stars" from any point on the Earth's surface, on any date and at any time, A total of 455 stars in 50 constellations may be viewed. and the "telescope" may be moved up, down, left or right, zoomed in or zoomed out. The stars be disployed by magnitude constallation



A relocatable disassembler which, unlike some similar programs, allows the discosembled source code to be output to memory. It may then be modified and re-assembled. Other features: page-mode option, output to printer if required, output of RSCII sumbois if required.



